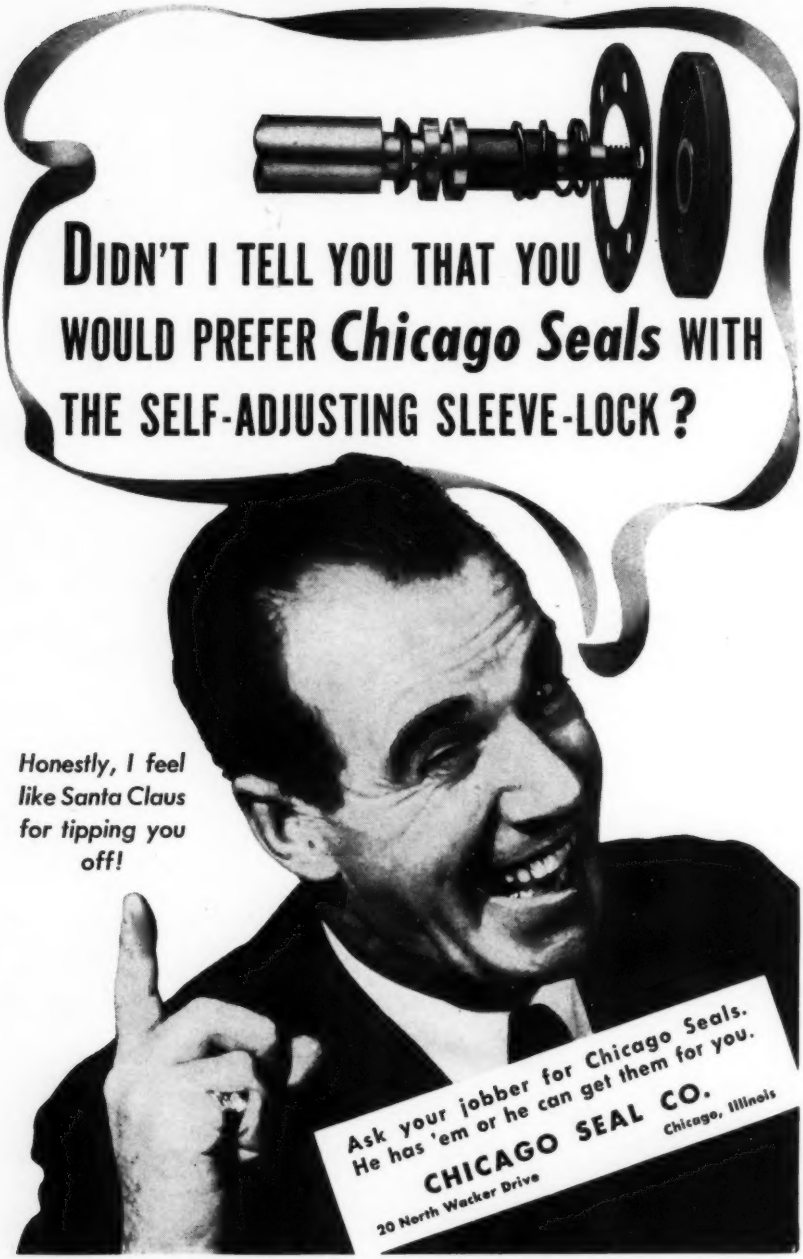
The Refrigeration Service Engineer

VOL. 12 NO. 12 ★ ★ ★ DECEMBER . 1944


DIDN'T I TELL YOU THAT YOU WOULD PREFER Chicago Seals WITH THE SELF-ADJUSTING SLEEVE-LOCK?
Honestly, I feel like Santa Claus for tipping you off!
Ask your jobber for Chicago Seals. He has 'em or he can get them for you.
CHICAGO SEAL CO.
20 North Wacker Drive
Chicago, Illinois

THE REFRIGERATION SERVICE ENGINEER. Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 12, No. 12, December, 1944. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, $2.00 per year; all other countries, $3.00 per year.

TESTED AND APPROVED

Refrigerants FOR TOMORROW'S REFRIGERATORS

AVAILABLE IMMEDIATELY!

In large measure, the success of your automatic refrigerators depends on the efficiency and dependability of your refrigerants. Refrigerants are the "life blood" of refrigerators!

Ansul Liquid Sulfur Dioxide is an ideal refrigerant for household refrigerators, with a long and impressive record of trouble-free performance.

Ansul Liquid Methyl Chloride is recommended for small commercial units. Its performance record is equally excellent.

Backed by pioneers in the field, Ansul refrigerants are clean, dry and pure. Ansul service is friendly and deliveries are dependable. Phone, wire or write—today!

THIS TECHNICAL BOOK
(3rd Edition)
on Ansul Refrigerants is still available. If you do not have a copy, send for one. It's free.

ANSUL TECHNICIANS ARE REFRIGERANT-SPECIALISTS. CONSULT THEM ANY TIME!

* REG. U. S. PAT. OFF.

ANSUL CHEMICAL COMPANY
Marinette, Wisconsin
Agents for Kinetic's "Freon-12" and "Freon-22"

SOME PEOPLE DON'T USE DETROIT VALVES!

Like the Eskimos for instance. Since nature provides their refrigeration, they don't care a good dried fish about Detroit Expansion Valves. They, like millions of others, have never even heard of them.

"Detroit" is synonymous with reliability and complete satisfaction. The widespread and enviable reputation of "Detroit" valves is attested by the fact that they have led the field for many years.

To thousands of refrigeration men, however, the name "Detroit" is nearly as familiar as their own. To these men, who *do* care about expansion valves, If you, unlike our Eskimo friends, are interested in outstanding expansion valve performance, specify "Detroit".

HERE ARE A FEW MEMBERS OF THE FAMOUS DETROIT LINE

No. 897 Dura-fram Thermostatic Expansion Valve for commercial applications. Compact and easy to install.

No. 788 Dura-fram large capacity Thermostatic Expansion Valve, with No. 790 Distributor, showing the distributor tubes and equalizer connection.

No. 673 Thermostatic Expansion Valve. For many years the standard of the refrigeration industry.

No. 899 New Dura-fram Thermostatic Expansion Valve for commercial installations. Furnished with external equalizer and forged union connection.

No. 793 Differential Temperature Expansion Valve specially designed for temperatures below *minus* 30° F.

DETROIT LUBRICATOR COMPANY

General Offices: **DETROIT 8, MICHIGAN**

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators.

VIRGINIA
Refrigerants

TESTED PURITY for SERVICE SURETY

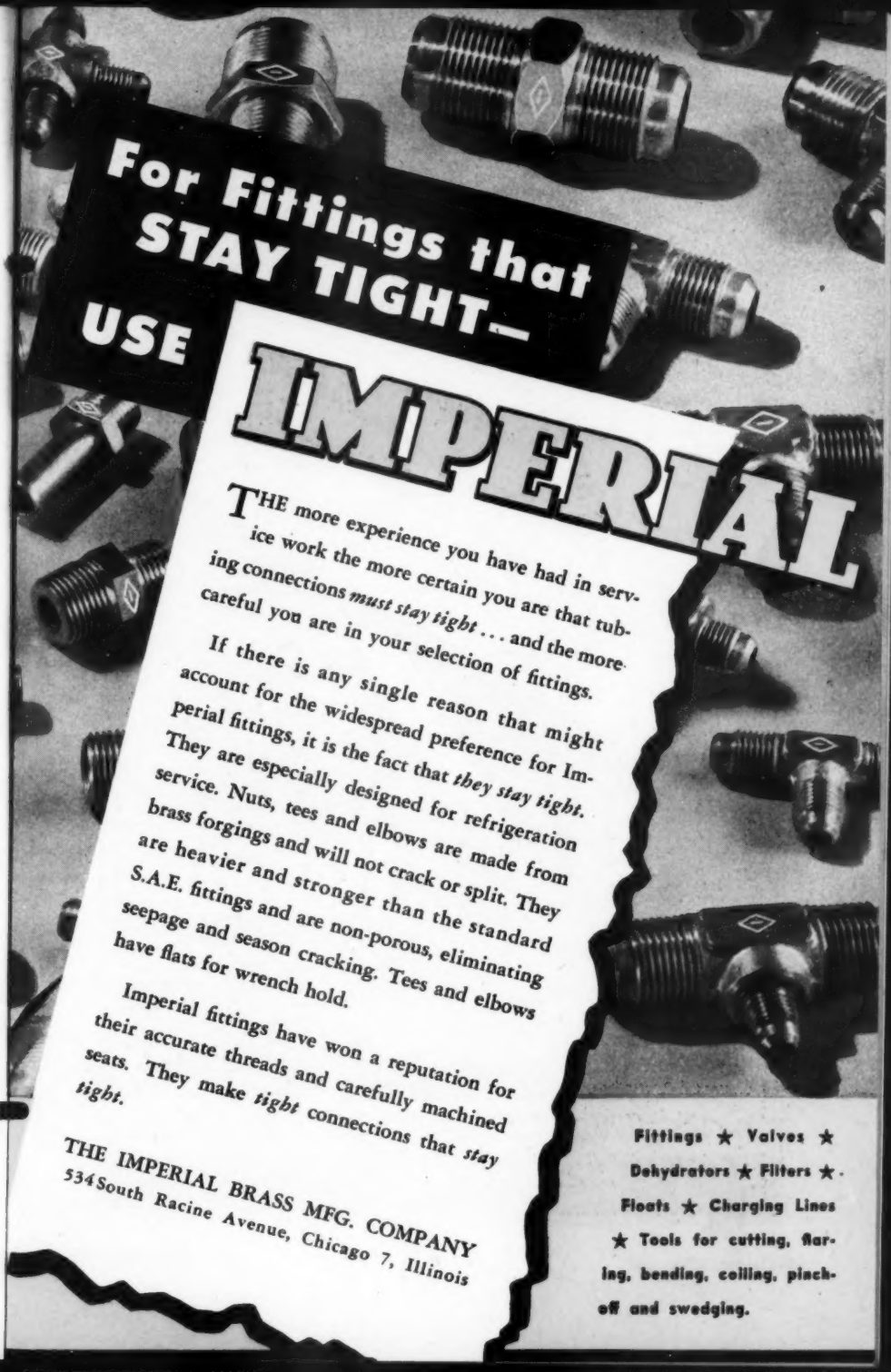
"EXTRA DRY ESOTOO", "V-METH-L" AND METHYLENE CHLORIDE

AGENTS FOR KINETIC'S "FREON-12"—AND "FREON-22"

VIRGINIA SMELTING CO.

WEST NORFOLK, VIRGINIA

72 Beaver St., New York 5 131 State St., Boston 4



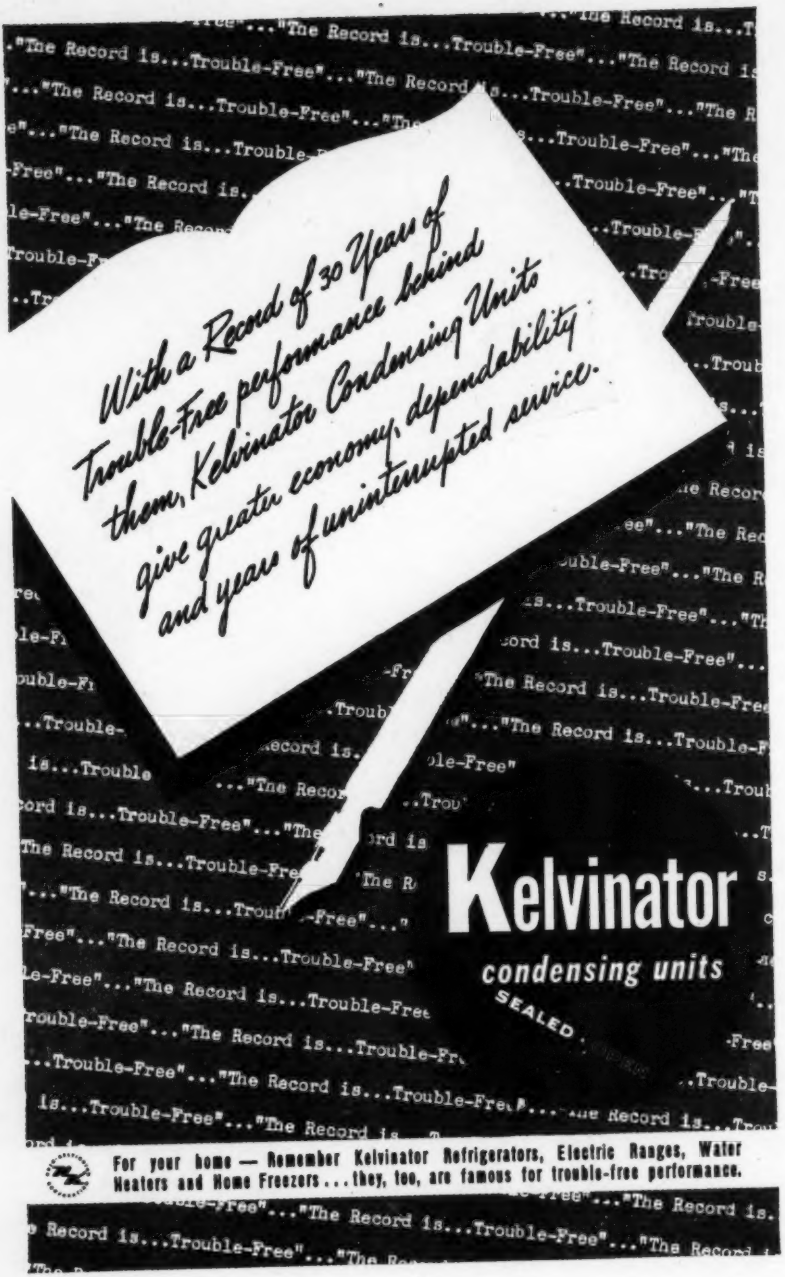
THE more experience you have had in service work the more certain you are that tubing connections *must stay tight* . . . and the more careful you are in your selection of fittings.

If there is any single reason that might account for the widespread preference for Imperial fittings, it is the fact that *they stay tight.* They are especially designed for refrigeration service. Nuts, tees and elbows are made from brass forgings and will not crack or split. They are heavier and stronger than the standard S.A.E. fittings and are non-porous, eliminating seepage and season cracking. Tees and elbows have flats for wrench hold.

Imperial fittings have won a reputation for their accurate threads and carefully machined seats. They make *tight* connections that *stay tight.*

THE IMPERIAL BRASS MFG. COMPANY
534 South Racine Avenue, Chicago 7, Illinois

Fittings ★ Valves ★ Dehydrators ★ Filters ★ Floats ★ Charging Lines ★ Tools for cutting, flaring, bending, coiling, pinch-off and swedging.


With a Record of 30 Years of Trouble-Free performance behind them, Kelvinator Condensing Units give greater economy, dependability and years of uninterrupted service.
Kelvinator
condensing units
SEALED
For your home — Remember Kelvinator Refrigerators, Electric Ranges, Water Heaters and Home Freezers ... they, too, are famous for trouble-free performance.

A Merry Christmas to You

We of Temprite Products
wish you, our friends and customers,
all good wishes for
Christmas and the New Year.
TEMPRITE PRODUCTS CORPORATION
FORTY-SEVEN PIQUETTE . . . DETROIT 2, MICHIGAN

DESIGNERS! ENGINEERS! REFRIGERATION SERVICE MEN!

Specify
DU PONT

METHYL CHLORIDE

99.5% pure

FOR YOUR REFRIGERATION WORK!

DU PONT METHYL CHLORIDE—SPECIFICATIONS

Purity	99.5% Methyl Chloride
Moisture	0.008% by wgt. max.
Acid (as HCl)	0.001% by wgt. max.
Residue on Evaporation	0.01% by wgt. max.
Boiling Range (760mm)	−24.6° to −23.6°C.
Color	water white, clear

This free book is yours for the asking! Du Pont's 92-page Manual on Methyl Chloride is filled from cover to cover with practical, helpful data for every air conditioning and refrigeration designer, engineer and service man. Write for your copy today! E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

HIGH-PURITY Du Pont Methyl Chloride is designed to meet your exacting requirements. Use it as an original charge, for recharging, or as a replacement for other refrigerants.

ORDER WHAT YOU NEED. You can get Du Pont Methyl Chloride when you need it—quickly—from stocks in principal cities.

WE KNOW YOU'LL COOPERATE by *returning empty cylinders promptly.*

PUSH THE PEACE WITH WAR BONDS!

DU PONT ELECTROCHEMICALS

DU PONT REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

TNT and TZ

In the South Pacific . . . passing the ammunition from LCI to shore, à la bucket brigade, these GIs keep a supply line functioning, assuring the success of the landing operation.

On the home front . . . passing the TZ from us to refrigeration service engineers, supply jobbers are doing a great job, helping to keep the refrigerant lines of thousands of units operating, assuring wholesome, healthful food to the country.

At the war fronts, too, TZ is doing a job destroying moisture chemically . . . but that's another story!

"The Moving Dehydrant"

THAWZONE

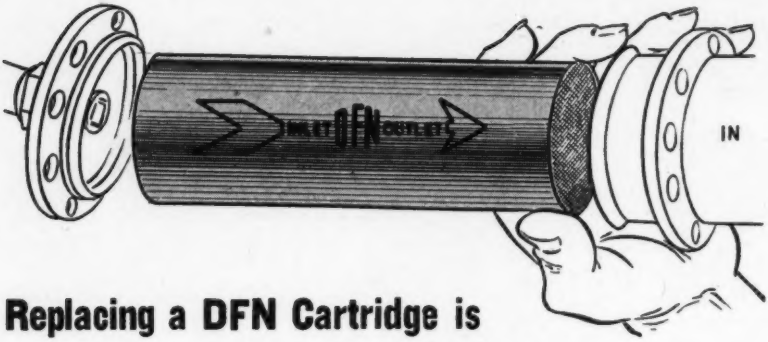
Fully Protected by U. S. Patents

The PIONEER FLUID DEHYDRANT

HIGHSIDE CHEMICALS COMPANY

195 VERONA AVE.

NEWARK 4, N. J.



Replacing a DFN Cartridge is

50% FASTER than a Refill Job!

Every time you handle a dehydrator refill job, it costs you twice the time and labor to get *partial* protection . . . as compared with the simplicity and efficiency of the DFN System.

Replacing a DFN cartridge requires only half the time needed to disassemble, clean, refill and reassemble a conventional bulk refill drier. Hermetically sealed, ready-to-use, quickly installed, DFN cartridges assure thoroughly reactivated, uniformly-packed drying agents. No loss of dehydrating strength through adsorption of moisture from the air; no chance of loosely-packed dehydrant permitting by-passing of refrigerant.

The DFN System is the only system that provides FULL protection against moisture, sediment and acid. It dehydrates and neutralizes, strains and filters. An exclusive anti-sediment assembly holds more sediment without pressure drop, filters the finest particles.

Ask your distributor about the DFN System—or write us direct.

McINTIRE CONNECTOR COMPANY, NEWARK 5, NEW JERSEY

Only the **DFN SYSTEM** DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

Alco's 300-Year Test...

YOUR GUARANTEE AGAINST VALVE DIAPHRAGM FAILURE

Incredible, but true! Diaphragms like those you'll find in Alco Thermo and Evapotrol Valves withstand the equivalent of 300 years of uninterrupted service on Alco test lines.

Samples of each lot of thin stainless steel diaphragm material are installed on standard valve assemblies and mounted in a special test fixture, as shown. Under pressure, the diaphragms go through millions of flexing cycles. The slightest sign of failure is cause for rejection.

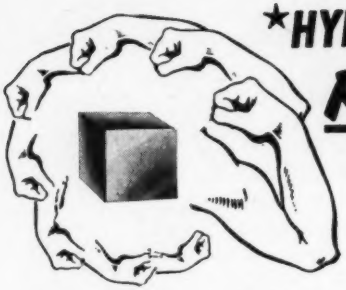
This 300-year diaphragm test is another reason for the dependable, trouble-free performance you get from Alco Valves. Remember, every part of an Alco Valve is Alco-tested. Alco Valve Co., 843 Kingsland Ave., St. Louis 5, Mo.

This test delivers a far more jolting stroke than diaphragm would get in actual service.

ALCO VALVE COMPANY

NOW, MORE THAN EVER, BUY BONDS

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves.



★HYDRAULIC-ACTION gives you POSITIVE ACTION

because solid-liquid-filled bulb and capillary provide expansion force comparable to that of a solid-metal bar.

EXPANSION and contraction of a metal with heat and cold is definite and exact. With each degree of temperature the amount of expansion is exactly the same.

A tube or pipe, completely filled with liquid is comparable to a solid-metal bar. The rate of expansion or contraction of the liquid, like that of the bar, is definite and predictable.

Ever see a frozen water pipe? The terrific force of the expansion of the water cracks the strong iron pipe as effortlessly as you would tear a sheet of paper.

Hydraulic-Action, an exclusive feature of White-Rodgers temperature controls, gives positive action at every degree in the range of temperature for which it is designed.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.

★ 2. Hydraulic-Action Principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.

3. Diaphragm motion uniform per degree of temperature change.

4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.

5. Heavier, longer-wearing parts are possible because of unlimited power.

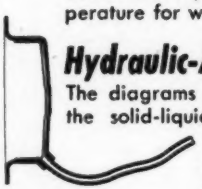
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.

7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.

8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

Hydraulic-Action—how it works

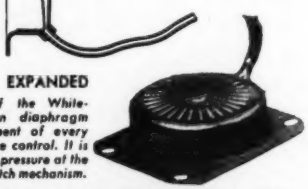
The diagrams below picture the action of the solid-liquid charge in actuating the diaphragm that opens and closes the switch mechanism of the control.



CONTRACTED

Above is a cross section of the diaphragm and part of the liquid-filled capillary. In this view, the liquid has contracted, releasing pressure on the diaphragm and causing the switch contacts to function.

In this cross sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.



EXPANDED

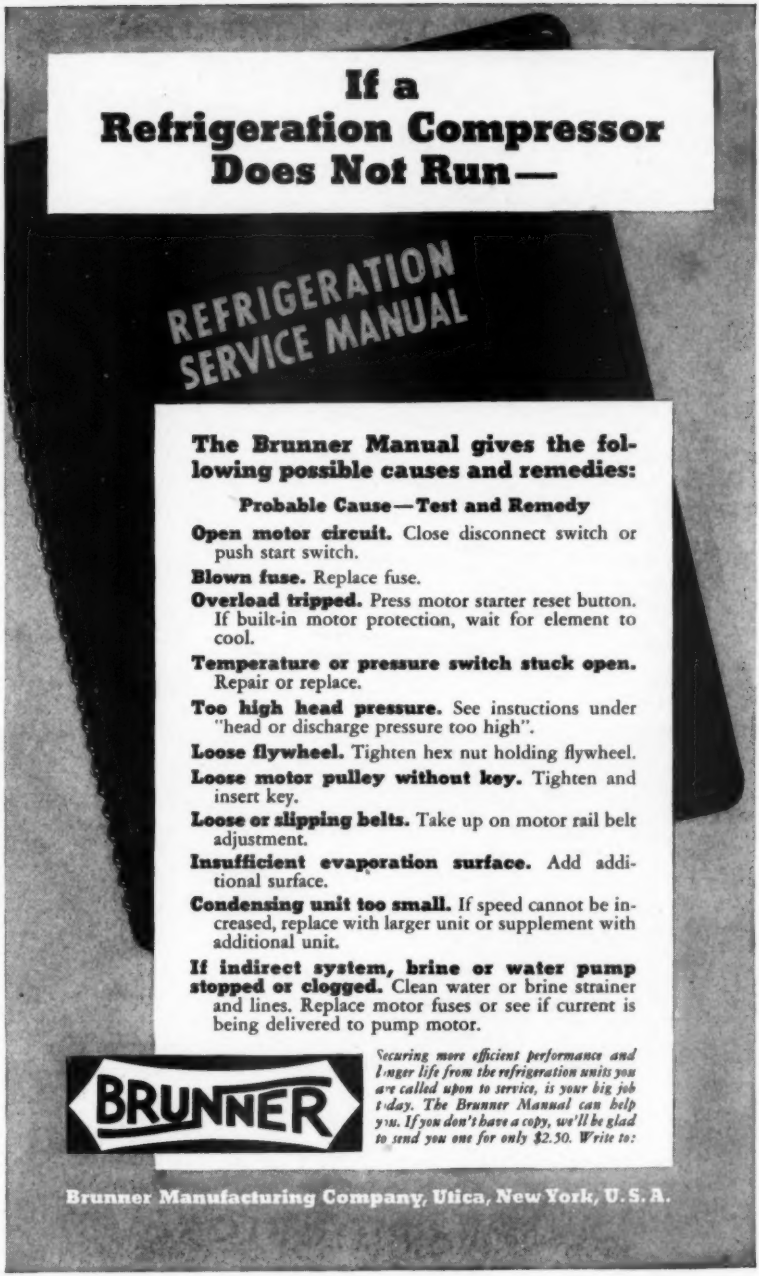
Actual size illustration of the White-Rodgers Hydraulic-Action diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.

WHITE-RODGERS ELECTRIC CO.

1203M Cass Ave. **St. Louis 6, Missouri**

Controls for Heating • Refrigeration • Air-Conditioning

If a Refrigeration Compressor Does Not Run—



The Brunner Manual gives the following possible causes and remedies:

Probable Cause—Test and Remedy

Open motor circuit. Close disconnect switch or push start switch.

Blown fuse. Replace fuse.

Overload tripped. Press motor starter reset button. If built-in motor protection, wait for element to cool.

Temperature or pressure switch stuck open. Repair or replace.

Too high head pressure. See instuctions under "head or discharge pressure too high".

Loose flywheel. Tighten hex nut holding flywheel.

Loose motor pulley without key. Tighten and insert key.

Loose or slipping belts. Take up on motor rail belt adjustment.

Insufficient evaporation surface. Add additional surface.

Condensing unit too small. If speed cannot be increased, replace with larger unit or supplement with additional unit.

If indirect system, brine or water pump stopped or clogged. Clean water or brine strainer and lines. Replace motor fuses or see if current is being delivered to pump motor.

BRUNNER

Securing more efficient performance and longer life from the refrigeration units you are called upon to service, is your big job today. The Brunner Manual can help you. If you don't have a copy, we'll be glad to send you one for only $2.50. Write to:

Brunner Manufacturing Company, Utica, New York, U. S. A.

A FILTERING ELEMENT IS NOT ONLY DESIRABLE BUT IMPERATIVE IN AN EFFICIENTLY OPERATING DEHYDRATOR

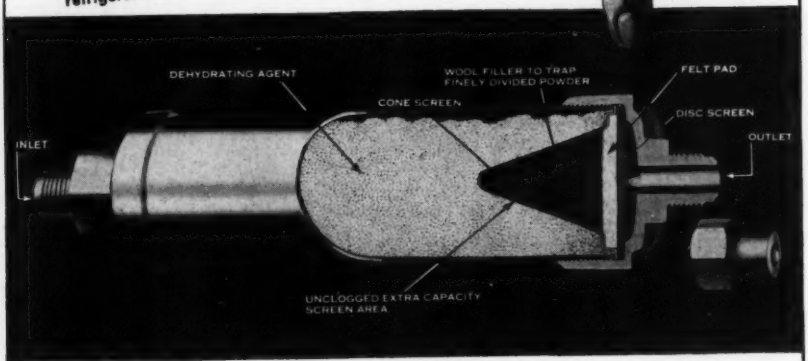
Mueller Brass Co. Filters and Driers feature the CONE SCREEN OUTLET, a specially designed filtering element that adds immeasurably to the life and efficiency of driers and filters.

Almost all crystalline dehydrating agents are subject to a certain amount of abrasion while a dehydrator is in service. Small portions of the dehydrating agent break down into very fine powder and crystals. Unless a well-designed filtering element is incorporated in a dehydrator, these fine crystals and powder have a tendency to clog the outlet filter, resulting in restriction to the flow of refrigerant.

With the MBCo. CONE SCREEN OUTLET, such finer crystals and powder are forced to the base of the cone, leaving the center and tip of the screen open to the free flow of refrigerant.

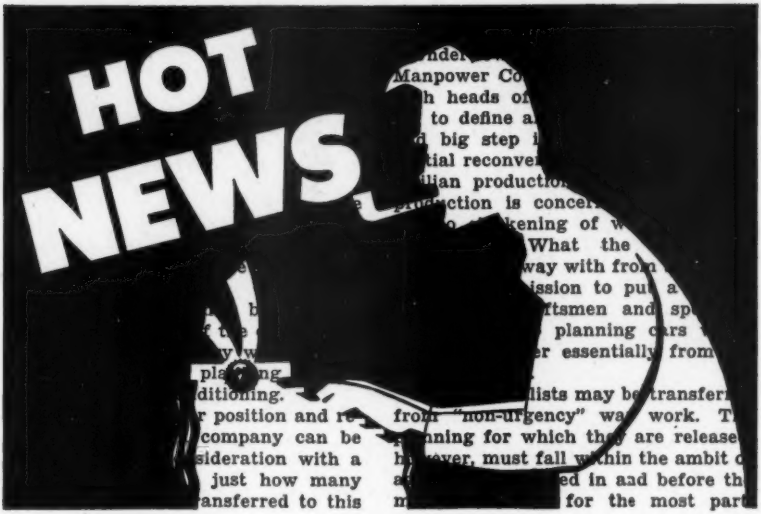
In addition, the cone screen is filled with pure wool which traps such particles that are sufficiently fine to pass through the screen mesh.

Particular attention has been paid to screen areas in Mueller Brass Co. Filters and Dehydrators, so that each size permits efficient passage to the maximum refrigerant volume that is used in a particular size refrigerant line.



Write for Catalog No. 2007

MUELLER BRASS CO.
PORT HURON, MICHIGAN



"BUILD YOUR POST-WAR SAMPLES NOW" says WPB

Deeply concerned with post-war problems of reconversion and anxious to see industry as far on the way as possible toward peacetime work just as soon as the war ends, the W.P.B. is now urging all industry to prepare post-war plans and post-war samples without delay.

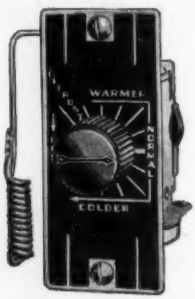
Tecumseh Products Co., builders of the famous Chieftain compressors and condensing units announce that their post-war sample models are being built. Units are designed on the same sound engineering principles that established Chieftain leadership before the war. A complete new line of commercial hermetics is presented, with greater flexibility of application and added safeguards for trouble free performance.

Builders of all types of commercial and domestic refrigeration equipment are urged to write or wire our sales department today for information before completing their post-war plans.

Chieftain

TECUMSEH PRODUCTS CO.
TECUMSEH • MICHIGAN

"MY! WHAT A POPULAR FELLOW"



WORK WITH YOUR RANCO JOBBER

He will gladly advise and counsel with you in the selection of the proper Ranco Control.

WHAT is the secret of Service Man Joe's Success? Why, Ranco Refrigeration Controls, of course! How do they contribute to his popularity? In this way:

Customers appreciate a Ranco installation. That is because Ranco Controls are eye-catching instruments . . . beautifully designed and sturdily constructed with stainless steel side covers, top frames and bases. They are dependable and accurate . . . precision made for long, satisfying service.

No wonder service men who install Ranco-Refrigeration Controls are so popular. Are you standardizing with Ranco?

Ranco Inc.

COLUMBUS 1, OHIO

The Refrigeration Service Engineer

Vol. 12 No. 12

December, 1944

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems

Official Organ
REFRIGERATION SERVICE ENGINEERS SOCIETY

The Cover

"Unfreezing" optical lenses from pitch fastening them to polishing blocks has aided in stepping up production of precision optical lenses at the Bendix Aviation Corp. plant. Story on page 56.

Published by
Nickerson & Collins Co.
433-435 North Waller Ave.
Chicago, 44
Telephones Austin 1303-1304-1305

EASTERN OFFICE
420 Lexington Ave., New York City
Telephone Lexington 2-4816

Publishers of Technical Books and Trade Journals Serving the Refrigeration Industries for over 50 years.

Subscription Rates United States $2.00 per year. Single copies 25c. All other countries $3.00 per year.

Copyright, 1944
by Nickerson & Collins Co., Chicago, 44

TABLE OF CONTENTS

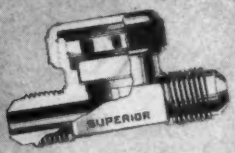
Government Bureaus—News and Rulings..... 19
Restrictions on Freon May Be Modified..... 19
Mechanical Refrigerators Subject to "Spot Authorization" 19
Milk Cooler Production..... 19
Applications for Refrigeration Equipment Denied 19
Construction, Operation and Servicing the Cold-spot Electric Refrigerator..... 20
Converting Mills Ice Cream Cabinets to Farm Freezers—*by L. K. Wright*..... 23
Replacement Parts Become More Plentiful..... 25
So You Want to Get Into Business for Yourself! —*by Paul B. Reed*..... 26
Service Pointers 29
Making Frost-proof Nuts..... 29
Iodine as a Solvent..... 29
Discharging Refrigerant 29
The Question Box..... 30
Comments on Question 624..... 30
Comments on Question 625..... 30
Expansion Valve Crosley Capillary Refrigerator 30
Capacity of Unit..... 30
Evaporator Defrosts 31
Soldering Stainless Steel..... 31
Testing Condenser and Transformer..... 31
Kromer Resigns as Program Director of NRSC... 32
Government Opens Course in Refrigerator Service 32
Patent Suit Wins Verdict..... 32
R. L. Hendrickson Joins Staff of THE REFRIGERATION SERVICE ENGINEER..... 33
Frozen Foods Discussed at G.E. Press Conference 33
REMA Holds Fall Convention..... 34
Jobbers Hold Tenth Annual Meeting..... 35
Dealer Suspended for M-28 Violation..... 38
R.S.E.S. News 40
Montgomery, Ala., Chapter R.S.E.S. Host at State Meeting 40
Chapter Notes 42
Ladies Auxiliary 48
Canadian Refrigerator Stocks..... 48
New and Improved Appliances..... 50
John Wyllie, Jr., Deceased..... 52
Suspension Order Reinstated..... 52
News of the Industry..... 54
Jones Heads OPA Advisory Committee..... 56

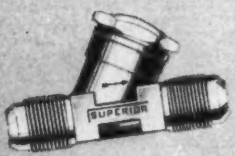
Superior

"Non-Chattering" CHECK VALVES

AND

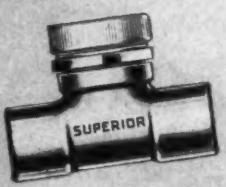
LIQUID INDICATORS



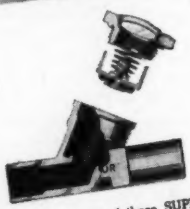


SUPERIOR CHECK VALVES—unique design, positive acting, spring-operated—cannot chatter, hum or buzz under any normal operating conditions. Pressure drop is negligible. Install one in the suction line of each low temperature circuit of all low temperature jobs—your assurance of maximum performance and trouble-free operation.

SUPERIOR LIQUID INDICATORS—call them liquid indicators, sight glasses, or refrigerant shortage detectors—one should be installed in the liquid line of each system. Seal cap over sight glass is double assurance against damage and leaks.



Note these exclusive features



The novel design of these SUPERIOR Check Valves permits the easy removal of all internal parts—*as a unit*—while soldering lines to valve connections, or for subsequent inspection.

Entire upper assembly of SUPERIOR Liquid Indicators—in all sweat sizes—may be removed *as a unit* to preclude damage by heat while soldering lines to body connections.

If you haven't a copy of Catalog R2, request one today

No. 111

SUPERIOR VALVE & FITTINGS COMPANY

PITTSBURGH 26, PENNSYLVANIA

OFFICES IN PRINCIPAL CITIES · WEST COAST STOCK LOS ANGELES (15) · JOBBERS EVERYWHERE

Government Bureaus—News and Rulings

ANNOUNCEMENTS and rulings issued by the various Government bureaus that are of general interest to the refrigeration service industries are summarized below. The essential facts only are given in most cases, and those who desire more complete or further information on any rulings or announcements are advised to write the proper Government agencies.

Restrictions on Freon May Be Modified

THERE is a possibility that restrictions on the use of Freon 12 may be modified about the first of the year by WPB. The present plan is to permit unlimited use of F-12 in refrigeration and air conditioning systems which are classed as essential. These include systems used for such purposes as food preservations, industrial refrigeration and industrial air conditioning. If this action is taken, it will probably come in the form of a revocation of paragraph b (2) on Conservation Order M-28.

Meanwhile the Freon-22 plant at Carneys Point, N. J., has resumed production of that refrigerant. The plant has not been producing F-22 for some time having been converted to other war output. The output of this plant together with other F-22 production is expected to ease the entire supply situation with respect to this refrigerant. It is expected that the F-22 will be adequate to meet all normal requirements about the first of the year.

S S S

Mechanical Refrigerators Subject to "Spot Authorization"

ELECTRIC and gas domestic refrigerators (L-5-c) and domestic washing machines (L-6) have been made subject to the "spot authorization" procedure (Priorities Regulation No. 25), the War Production Board announced November 21. These items were made eligible for spot applications by an amendment to Direction No. 1 to Priorities Regulation No. 25.

This action merely broadens the scope of the "spot authorization" procedure and does not mean that the new items it includes will be made immediately, WPB officials pointed out. Due precaution is exercised in the operation of the spot procedure to assure that military requirements are met before any production is permitted under Priorities Regulation No. 25, they said.

At the same time, WPB also issued a new Direction No. 2 to Priorities Regulation No. 25, which broadens the scope of use of Form WPB-4000, the application form used in connection with the spot procedure.

S S S

Milk Cooler Production

CONTROLS over the production of refrigerated farm milk coolers were transferred November 2 from General Limitation Order L-257 (Farm Machinery) to Order L-38 (General Industrial Equipment) chiefly for simplification purposes, the War Production Board reported. This action was effected through amendment of L-257 and Schedule B under that order together with issuance of Direction 2 to L-38.

Farmers can now procure a refrigerated milk cooler by signing a certificate of vocation with their dealer together with a statement that the cooler is to be used to cool milk for sale through wholesale or retail sources. The certificate will replace Form WPB-1319, which consumers formerly had to use. It will also replace the rationing certificate that farmers obtained from local farm rationing boards in order to secure coolers, prior to the revocation of War Foods Administration rationing orders last month.

S S S

Applications for Refrigeration Equipment Denied

ALL applications by dealers for refrigeration and air conditioning equipment, including all self-contained package units, are being temporarily denied, the General Industrial Equipment Division of the War Production Board announced November 18. These applications are made on WPB Forms 541 and 547. The denials, however, will not affect applications for compressor bodies, low-sides and other repair components.

This action was taken by WPB because of the unprecedented volume of applications for refrigeration and air conditioning equipment being received from dealers and distributors, officials said. The priority ratings previously granted for inventory purposes,

(Continued on page 52)

Construction, Operation and Service

The Coldspot Electric Refrigerator

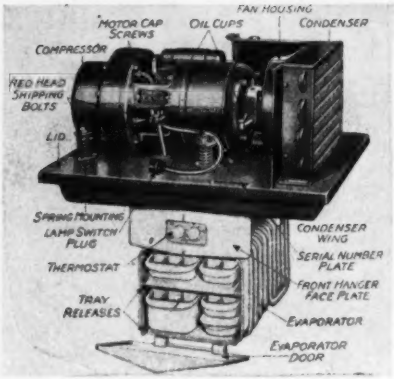


Fig. 1—Front view of refrigerator unit

This is the first of a series of articles giving detailed servicing instructions on Coldspot Electric Units, compiled by permission from the Service Manual issued by Sears Roebuck & Company, makers of the Coldspot Units. This is the first authorized publication of this material and will prove of inestimable value to the thousands of service engineers all over the country who daily come in contact with these refrigerators.

General Construction (Top Mounted)

BY THE word "Unit" is meant the whole mechanical portion of the Coldspot Refrigerator. These Coldspot units are of the "Package" type, Fig. 1, that is, the entire mechanical assembly is mounted on a deck or lid which forms the top of the refrigerated compartment and can be installed or removed as an assembly. The high pressure (high side) portion of the system is mounted on the top of the deck with the low side or evaporator portion hung below the deck. The deck is insulated and rests on a sealing gasket when the unit is in place. The position of the unit is shown in Figs. 2 and 3. The circulation of air through the condenser is also shown in Fig. 3.

Models have been produced having a bottom mounted unit, Fig. 4, which is identical with the package unit in all mechanical details, the only difference being in the method of mounting. In the bottom mounted unit, the "High Side" is mounted in a section at the bottom of the cabinet. The evaporator is mounted in the top of the cabinet.

Compressors (Open Type)

The open Coldspot Compressor is of the moving vane, rotary type. Referring to Fig. 5, it can be seen that the space between the rotor and cylinder is divided into four spaces by the moving blades or vanes. The blades are held against the cylinder by centrifugal force—*no springs are used.*

Lubrication

The nature of a rotary compressor requires that it operate in a constant bath of oil. The oil must be of exactly the proper

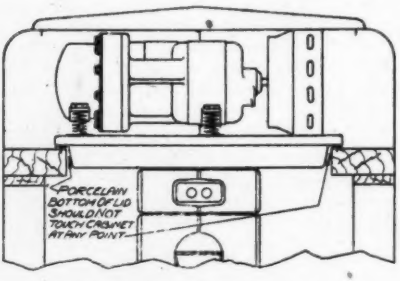


Fig. 2—Location of unit in cabinet

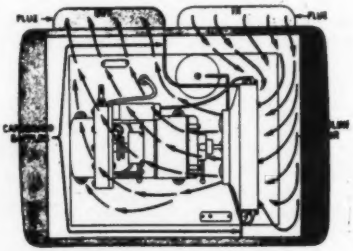


Fig. 3—Flues and baffles for directing air circulation

...servicing
...ldspot Electric Refrigerator

viscosity to seal the clearances between moving parts for highest efficiency and long life. The film of oil between the blades and cylinder seals these points which would otherwise be subject to "blow-by" of the gas.

Figs. 6, 7, and 8 show the oiling system of the Coldspot open compressor. Referring to Fig. 8, it can be seen that the oil supply in the compressor housing is under the pressure of the gas from the discharge side of the compressor. This pressure forces the oil out through the oil cooling coil and into the compressor. The oil inlet is shown in detail (in Fig. 8.) The compressor creates a reduced pressure in the oil inlet and also in the drilled holes leading to the back and front bearings of the rotor. Oil is drawn into the compressor during running periods. When the compressor stops running, oil is forced into both bearings, to fill the spaces which were reduced pressure during operation. Since reduced pressure is also created within the seal bellows when the unit stops, a drilled vent from the suction port to the front bearing permits the excess oil and pressure to be released from the seal bellows to allow easier starting. If this were not done, the seal button would be under abnormal pressure against the seat which would cause excessive friction during the first few revolutions. *(This is the reason for starting and stopping the unit several times when first put into service.)*

The oil cooling coil consists of about 12 feet of copper tubing fitted into the condenser on older models, or coiled in a tight spiral and clamped to the deck of later models. In addition to cooling the oil, this coil of small tubing acts as a restrictor to control the flow of oil to the compressor.

A screen is fitted in the oil inlet to the compressor to prevent foreign particles from being carried into the bearings and rotor. The oil outlet from compressor housing to the cooling coil is below the normal oil level in the housing. A screen is fitted to the oil outlet on late models (1936 and later, Fig. 8). On earlier models (prior to 1936), the outlet tube extends into the housing beyond the rear bearing

Fig. 4—Bottom mounted unit

and curves downward close to the bottom of the housing (see Fig. 9). This feature will be discussed from a service standpoint later. The early models include A, B, D, E, F, D2, E2, F2, G2, DSP, DA2, EA2, FA3, GA3, DASP, EASP, FA4C, K, L, MSP, J, JS, K, KC, KS, JSS, KCS, T, W, Y, Z, J5, and WC.

Compressors are sized to handle the load imposed by the various sized cabinets. It will be noted that smaller compressors are used on later 6 cu. ft. cabinets than were used on earlier models of the same size. This reduction in compressor size was made possible by increased efficiency due to improved blade shape (rounded edges) and increased efficiency in cabinet design which reduced the load on the refrigerating unit through better insulation and sealing methods. Units to be operated on 25 cycle current usually have one size larger compressor than 60 cycle units for the same sized cabinet because of the

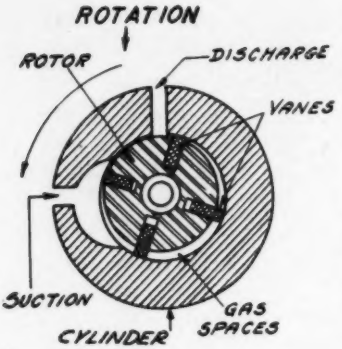


Fig. 5—Moving Vane Rotary Compressor

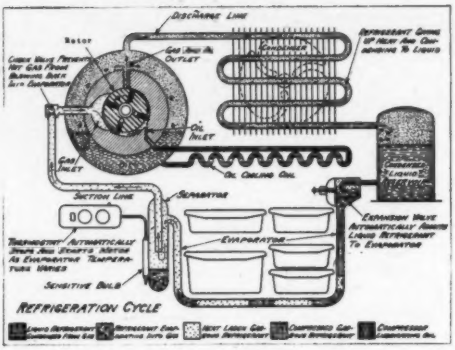


Fig. 6

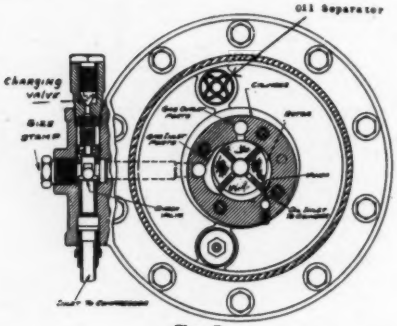


Fig. 7

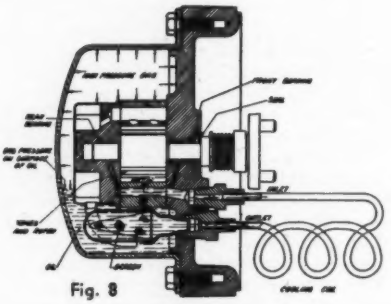


Fig. 8

slower speed of the 25 cycle motor. This is an important consideration when field conversion or exchanges of motors are made.

The size of the compressor within the compressor housing is usually indicated by a stamp in the discharge plug (see Fig. 7). Sizes are No. 1 (small), 2, 3, and 4 (large).

Mounting

Early model units have compressors mounted rigidly on a U-shaped tube which forms the Receiver of the unit, and which is spring mounted on the unit deck. The motor is independently spring mounted and must be properly aligned in the field. Other models have the compressor rigidly connected with the motor, and both are spring-mounted on the unit deck (see Fig. 1).

Check Valves

A check valve prevents leakage of high pressure gas through the compressor into the evaporator during periods when the compressor is not running. It consists of a bronze bushing ground with a flat valve seat and pressed into the suction opening of the compressor casting. A thin, flat, stainless steel disc covers the hole, and a ball within a brass cage adds weight to hold the disc on the seat. Fig. 7 shows the check valve used on all open model units.

(Continued in next issue)

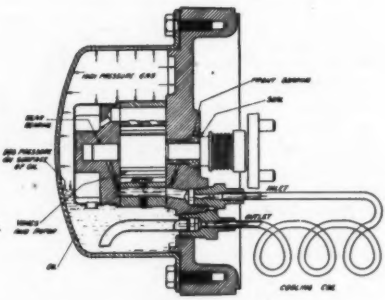


Fig. 9

Converting Mills Ice Cream Cabinets to Farm Freezers

By L. K. Wright

Chief Engineer, Frosted Food Cabinet Corporation
New York City

THE data presented in this article provides timely, pertinent information of particular interest to the commercial servicemen who encounter trouble with the Mills 17 and 24 models which have been converted or pressed into service as farm freezers. Restrictions on the manufacture of new equipment results in the dictum that all present equipment must be kept running for the duration and further, must be kept going at the peak of efficiency.

Troubles

The ordinary service complaints incident to the mechanical equipment are common to all refrigeration apparatus of the compression type, especially the thermostatic expansion valve controlled variety, and has not been touched upon as the serviceman is assumed to be familiar with these mechanical troubles, their causes and the regular corrective measures employed to get such apparatus back into proper service. The data given provides points that are particularly applicable to rebuilt, altered or redesigned models which are intended to serve as farm freezers.

A service man should approach service on these units, or any Farm Freezer, from the standpoint that in many instances the owner knows little or nothing at all of low temperature food storage or farm freezer operation. The better organizations who have altered, rebuilt or redesigned these Mills 17 and 24 cabinets for farm freezer service provide data on the care and operation of these units. Check this data if it is available and determine if the owner has followed instructions, for while the customer may be familiar with ordinary refrigerator care and operation, he or she may know nothing at all of freezing practice.

The data which follows covers Mills 17 and 24 cabinets which have been converted with some thought and care. True, there are many which were merely slicked up in their rapid passage through a so-called overhaul shop. If any of these are encountered study the material herein—perhaps an oil interceptor or a heat exchanger should be added.

Oiling Motors

You who have to obtain motors to replace burned-out ones, or those in which bearings have given out, know how difficult it is and which might have been avoided if only a few drops of oil had been used in the bearings. See that not only is the compressor motor oiled once a month but that the blower motor is not neglected. Many refrigeration service organizations use a light grade of refrigeration oil as it has the correct viscosity and will withstand low temperature operation. This is important as many of these farm freezers are in barns, open sheds, unheated garages, under porches, and in pantries.

Ordinary oils may thicken under these low temperature conditions and give trouble. Do not use old oil; especially compressor oil as it may be contaminated and corrode bronze bushings, steel shafts or ball bearings. Oil lightly but regularly. An overabundance of oil may result in the lubricant getting to the windings, commutators, or brushes and give trouble; requiring a motor overhaul or even replacement. If a spare motor is not available as a temporary loan, the customer may lose his stock of food. In these war days this a real loss and all means must be used to prevent such a thing.

Blower Bearings

The best time to oil the blower bearings is when the cabinet is defrosted. More time can be devoted then and the oil will be sure to flow to the bearings when the cabinet is in a warmer condition.

There are a series of wheel type of blower fans mounted on a shaft which runs the length of the coil space. Housings are

placed about the fans and the shaft is supported on bearings strung along a base. The entire fan, shaft and base plate assembly is installed as a unit, one end of the shaft extending out of the cabinet and provided with a pulley.

Oil cups for the blower shaft are located in the individual compartments, one in each double compartment and one on the control panel in the high temperature compartment.

Today there is available an oil intended for the low temperature two and three stage refrigerating system—an oil which will withstand low temperature conditions. This oil is intended for compressor use, but the "thinner" grades, about 125 viscosity, is suited for use on the blower bearings. Use this type of oil if possible.

High Temperature Compartment

This high temperature compartment should be employed to take the heat from fresh foods before these foods are placed in the freezer compartments. If the foods are chilled through by storage in the high temperature compartment overnight, they will freeze faster and result in a really quick frozen product. Internal heat will slow down freezing rate and the crystals formed will be of large size. Slow frozen foods slump and leak when defrosted in contradistinction to fast frozen products, for in the latter the small crystals do not rupture cells and therefore the food has a better appearance upon defrosting.

Blower Motor

This motor has two oil cups. In some cases you will find the one on the pulley end difficult of access, but do not neglect it. The better remanufactured models have the motor mounted on a tilt-plate connected to an angle iron with a wing nut to adjust the position of the motor and thus the belt tension. Have one inch of belt play. A tight belt will give bearing trouble and wear out belts fast. Bear in mind a V belt has a wedging action as it enters the pulley grooves and arrives more efficiently with proper tension than where the belt is stretched tightly. The new war-time belts do not stand excessively tight operation. These belts stretch quickly to a permanent set.

The original drive (motor) pulley was of 3 inch diameter. A study of the cause of sweating or freezing of the lids revealed that a smaller drive pulley (about 2 inches in diameter) would give better results. By slowing down the blower fans the air which they force over the tube bank would be driven with less force against the lids. The original driven (shaft) pulley of 2½ inch diameter is usually retained on all models. Reducing the force of the air stream results in less air being forced up to the lids and the tendency is to reduce heat leakage there and prevent excessive sweating.

Where quantities of food must be frozen and they are tightly packed, the original motor pulley should be retained for the high pressure air stream is needed to force its way through each loaded chamber, plus the fact that the greatest volume of air is required for the freezing of the foodstuffs. Therefore, if a cabinet is found with a smaller pulley on the drive and the cabinet is under heavy usage, it is best to remove the smaller drive pulley and to replace it with a 3 inch one.

To Freeze Foods Rapidly

It is advisable to instruct the owner that if it be desired to freeze any fresh food rapidly—and this is the very thing deemed essential—it is best accomplished by placing one-inch wood strips between the packages of food. This provides channels for the passage of air throughout the mass of food and gives even, quick freezing. Piling food in packages tightly together is all right where the food has been frozen and reduced to low temperatures. It is even desirable, as it keeps air from the food, with less chance of penetrating the paper seals. Also, the food occupies less space. Once a food is reduced to its holding temperature it does not impose any further load on the refrigerating machine. The only heat is that coming through the insulation or from the opening of the chambers. True, there is also a little heat evolved by the fans and bearings, but the food offers no load at all.

Wood strips are used in storage warehouses but few cabinet manufacturers or rebuilders of apparatus, supply them or even know of their use. Use an odorless wood and boil in paraffin. Round the corners and edges, and have the surfaces smooth before boiling in the wax. They will not tear the food wrappers. After the food is frozen they can be removed and stored somewhere in the cabinet. The wood has a fairly high internal heat load and the strips might just as well be kept in the cabinet rather than be stored outside where they gather dust as well as assume room temperatures.

Operating Pressures—Back Pressures

Originally machines were charged with F-12, but due to the war-time restrictions this refrigerant is almost unobtainable. Units can be converted to methyl chloride. Many have been, and therefore data on both refrigerants is furnished. On methyl chloride cabinets the normal operating pressure ranges between 9 and 11 inches of vacuum; 10 inches being normal. The cut-out is best set for 15 inches.

On F-12 cabinets the back pressure ranges between 3 and 6 inches, 5 inches being normal cut-out should be set for 11 inches.

Head Pressures

The following head pressures apply for operations in different room temperatures. See that the unit has been running, with back pressure reduced to normal, as per above; then check with the chart given below. As room temperature, use the temperature of the air going over condenser; not coming off condenser. Make sure the thermometer used to obtain reading of room temperature has had time to come to balance.

METHYL CHLORIDE SYSTEM

	Temp. of Air Over Condenser, °F.								
Back Pressure	60	65	70	75	80	85	90	95	100
9" V.	71	74	79	83	95	100	110	115	120
11" V.	65	72	76	80	89	97	102	112	118

F-12 SYSTEMS

	Temp. of Air Over Condenser, °F.								
Back Pressure	60	65	70	75	80	85	90	95	100
2" V.	78	84	90	97	103	110	117	124	135
6" V.	77	83	88	96	102	109	116	123	132

The pressures given in these tables under the various room temperatures are in pounds per square inch gauge pressure and are head pressure readings. Head pressures may vary 2 pounds above or below the stated pressures. If pressures are below this tolerance, the system is undercharged. If above tolerance, the system may be overcharged, have air in condenser, excessive oil charge, a dirty or plugged condenser, bent or broken fan blades, or the air flow over condenser may be impeded, etc. A service man must check for proper charge. An undercharged system indicates a leak. Find and correct it before charging. As low temperature operation necessitates working the low side under a vacuum, the search for a leak should start by an inspection of the high side.

Where excessive head pressure is encountered, the following should be checked: (1) dirty condenser, (2) for a leak on low side which allows ingress of air, (3) overcharge, (4) condenser too close to wall, cutting down air flow.

(This is the first of a series of two articles. In the next installment the author will discuss temperature control, defrosting procedure, rapid freezing, normal operation, low pressure cut-out, and heat-exchanger.)

S S S

REPLACEMENT PARTS BECOME MORE PLENTIFUL

ACCORDING to reports received from electrical appliance service centers and published in a New York newspaper, electric replacement parts are becoming more plentiful. An announcement from the General Electric Co. said more replacement parts were available and that service personnel reflecting the results of the G.E. nation-wide training schools for service men was better qualified than ever before.

The refrigerator repairmen who were really suffering from a shortage of parts are beginning to take hope, according to R. J. McKenty of Rex Cole and secretary of the Refrigeration Service Managers of Greater New York. The manpower situation has eased up somewhat, he said, since Selective Service has been drafting fewer men over 30 and the industry has been fortunate in acquiring a small number of mechanics from recently closed war plants. The general supply of materials and parts also is a little more liberal, he stated, but at the same time a few parts have dropped out of sight entirely.

Mary R. Reidel of the Proctor Electric Co., which maintains a New York City repair plant staffed entirely by women, pointed out that although there had been a general easing of materials for repair parts, if a certain part happened to be manufactured in a critical labor area, it was apt to prove at least a temporary bottleneck in repairing appliances.

Although Proctor never employed women repair workers before the war, the company plans to retain them after the war since they seem to have more interest in "making the thing work." Plans for extended service facilities will allow the continued employment of the women workers, Miss Reidel said, as well as making jobs for returning service men.

So You Want to Get Into Business for Yourself!

By Paul B. Reed

Chairman, Wartime Educational Committee, R.S.E.S.

Mgr. Refrigeration Div., Perfex Corp'n.

ARTICLE II

LAST month, we tried to predict general business conditions after the war. Let us now examine the service picture and see how it fits into the general picture, and specifically what the refrigeration service engineer, returning to the industry from military service or non-refrigeration civilian work, can expect in his line of work.

Before the war, there were more servicemen than jobs, especially during the winter off-season. As in other lines of work, the best men (usually but not necessarily the most experienced men) had little difficulty in keeping steadily employed either for a dealer or contractor or working independently for themselves. The less able men found themselves in demand and perhaps even working long hours during the spring and summer but without jobs the remainder of the year. Feast or famine, income and irregularity of hours per day and weeks per year has always plagued the service business just as they also plague other seasonal businesses and the building trades.

War Hits Service Industries

During the war, the servicemen were hard hit. Not only did many go into the armed forces, but perhaps a greater number were attracted to the war industries by the feeling that they were contributing more directly to the war effort than in refrigeration service, the higher pay, and the fact that, at first very little consideration was given to refrigeration servicemen as regards deferment, priority assistance and gasoline and tires. The refrigeration industry had done a poor job of selling its value and importance to the public and to officialdom. It was not until the industry made representation cooperatively through its various associations to Washington on how vitally essential refrigeration is to the war effort, industrial production and civilian economy and how desperate had become the service situation, that the serviceman got much consideration. By that time, there were only 80% of the servicemen left. Some have come back from war plants, the army and the navy. The trainees from classes formed under the National Refrigeration Manpower Program, and by private and municipal vocational schools, have furnished helpers and shop men, who have been able to relieve more experienced men for trouble-shooting. Parts have loosened up considerably, but some things such as motors, Freon 12 and high-quality tools are still very tight.

Wages Not Increased

Wages have risen some but not in proportion to the demand for men nor the amount of work increase. Costs of installation and service material and of replacement parts have been pretty well controlled as have been the changes to the customers. There has been some "racketeering" by unprincipled servicemen, but such cases have been exceptional and the practice has not been widespread.

The refrigeration service engineer will emerge from the war period with greatly increased prestige and importance. His record has been impressive. He has been about the only link left with the customer and collectively, he probably knows more about what the postwar customers will buy than any other segment of the industry. He knows what condition the customer's equip-

The Refrigeration Service Engineer will emerge from the war period with greatly increased prestige and importance. There is going to be a tremendous amount of refrigeration equipment made and sold and service men will be needed to install and service these units. All this forms an alluring picture, but on the question of going into business for himself there are pitfalls and "things to think about" first, which the author points out in this second article.

ment is in, about how much longer it can be counted on to hold out. Someway, somehow, he has kept their equipment in operating condition. He has earned their gratitude and confidence. He has talked to millions of users. They have confided to him what refrigeration equipment they would like to have, whether they expect to buy at once as soon as it is available or whether they will wait awhile. He stands in an excellent position to sell the first products for he knows whom to go to as immediate buyers. Moreover, he can talk to them as an acquaintance rather than on a "cold turkey" canvas. Whether or not the independent service operator is to engage in a sales program or remain "service only" with occasional sales of a replacement condensing unit or coil is a big subject that merits discussion in a separate article later.

Distribution of Service Men

In addition to the service engineers now active in civilian refrigeration service, most of whom will remain in the business after the war, there are many now in war plants either in refrigeration maintenance or non-refrigeration work. There are many as civilians in refrigeration maintenance in army camps and air fields and in navy yards. There are many on ships operated by the Maritime Commission; and last, but certainly not least, are the thousands in the Army, Navy, and Marine Corps, some of whom are pursuing their old trade. Others are in unrelated activities into which they were put by the incomprehensive vagaries of the military aptitude tests which changed mechanics into stock clerks, and stock clerks into mechanics. Both the Army and the Navy maintained refrigeration schools which crammed intensive training in refrigeration into hundreds of men, many of whom will wish to stay in refrigeration work when they return to civilian life.

It therefore looks as if there will be no shortage of refrigeration servicemen after the war. In fact, there are many who fear that the supply will so greatly exceed the demand that there will not be enough jobs to go around. To bolster this belief, it is cited that even before the war the tendency toward self-contained unitized equipment using hermetically sealed units was already apparent. Much equipment of this type does not need a trained experienced service engineer to install it and put it into operation. It may require only that the shipping blocks be removed and the electric cord be plugged in, although some types have valves to be opened which, in some cases, can be done by comparatively inexperienced help. Service on the hermetic unit may frequently amount to simply removing it and replacing it with another unit, and some contend that this too does not require a trained, experienced service engineer.

Return to Pre-War Jobs

Of course, there is a basis of much truth in these fears, but there are factors to offset much, if not all, of these fears. In the first place, the law requires that a workman, taken into military service, can demand and get his old job back from his former employer, even though it means that whoever has been on that job since will have to step out and go back to *his* old job. This law helps the refrigeration service engineer who was working for someone else when he went into service, but it doesn't help the independent serviceman, who like the doctor and dentist, had built up a clientele of customers who meanwhile have gravitated elsewhere for

their service. That refrigeration service engineer, along with those who acquired their refrigeration training and experience in military service will have to decide whether to find a job with a dealer, contractor or larger independent service company or buy or build up his own business. The same applies to those now in war plants, army camps, etc.

The soldier or sailor who gets paid off after the end of the war in Europe will have some advantage over those who have to stay in until after Japan is beaten, for the latter may find the most desirable jobs taken by the time they get out. These are the darker sides; now let us take a look at the brighter sides.

Demand for Refrigeration

Unless some of the best informed men in industry are badly wrong, there is going to be a tremendous amount of refrigeration and refrigerated equipment made and sold after this war. People have been unable to buy new refrigerators, home freezers, market, grocery and delicatessen fixtures, water coolers, beer coolers, draft beer equipment, bottled beverage coolers, farm freezers, farm milk coolers, locker plants, ice cream cabinets, soda fountains, vending cabinets, room coolers and other forms of air-conditioning equipment for three years now and it will be another year at least before they will be able to get unlimited quantities of the new post-war models. So there will be a pent-up demand for a four year's supply. Even though the amount of service work *per cabinet* may be less because of its unitized design, there will be *so many* that thousands of servicemen will be required to install and service them. New uses for refrigeration, results of wartime experiences will add tremendously to service responsibilities.

Then, too, there are thousands of household refrigerators that are "down" and thousands of installations that are now just barely getting by, being held together by "baling wire" as Mr. H. T. McDermott so well put it in a reecnt talk to manufacturers. These installations cannot be replaced immediately, perhaps the owner doesn't want to nor can he afford to replace them. So there are thousands of overhaul jobs requiring many field men and many shop men. It will take months and perhaps years to entirely catch up with the accumulated service.

One of the things you will have to give early answer to is whether you will go into business for yourself or whether you will work for others. Some men may feel that unless they get back into civilian service soon, they may as well not consider going into business for themselves. They are afraid that all the good franchises for nationally known brands, whose names carry prestige, will have been gobbled up. They fear that all the good, large-volume profitable service contracts will have been tied up. In truth, there is some basis for their fears, but there will always be shifting of dealerships. Quotas will not be met, services will be found unsatisfactory; franchises and contracts will change hands. New products will come on the market. New companies will come into the picture or old companies will go into new lines. There is always opportunity.

Many men will wish to have a chance to look things over first; to size up the situation, perhaps to make connections and obtain franchises and contracts before opening a business. These men will probably get a job working for someone else while they are deciding what to do. Men who worked for themselves before, may have their tools, truck, shop, and some stock. They have their old friends and customers who may perhaps be won back, especially if the pre-war service was better than that during the war. In some cases, a partner, too old for military service or deferred for other reasons, may be carrying on, and holding the business together as well as he can.

Buying Into Established Business

Some may find the answer to their problem to be to buy out or buy an interest in an existing business. If the present owner can show that it has been well-managed, is in reasonably good financial condition, has a good reputation, an adequate present volume of business, that the locality can support the increase volume necessary to give the new partner a good income and if the present owner or owners are of good character and of a disposition that will enable you to get along together, then a partnership is often advantageous. The framework of a business is already there, if the partners are honest, can get along together, are energetic workers and good business men, they can build well together. It sometimes happens that one is primarily the mechanically inclined and looks after the shop and field planning, while the other handles the stock, records collection and selling and

(Continued on page 38)

Service Pointers

Practical Service Men Tell How They Meet New Repair and Service Problems

UNDER this department a number of practical service men show a commendable cooperative spirit in passing on to others information on special repair and service problems. We believe if more readers would send similar contributions, making THE REFRIGERATION SERVICE ENGINEER a medium for the exchange of information on service, much benefit would accrue to all. Similar contributions are solicited from all readers.

Editor's Note: Here are the first Service Pointers submitted in the recent "Service Pointers" contest. Other successful entries will be published in subsequent issues.

MAKING FROST-PROOF NUTS

HAVING at times been unable to purchase ½ flare nuts of the short neck frost-proof type which we have made it a policy to use in refrigerated areas of an installation, I found a simple expedient by placing a flare plug (½ flare) in the chuck of the lathe and screwing the flare nut onto the plug. It is then a simple matter to cut any long neck type nut (using a short neck nut as a model) to the desired length. The flare plug makes it a quick operation for quantities. Be sure and cut a slight bevel on the inside edge of the nut so it can be easily slipped over the tubing. The same procedure can be followed with all size flare nuts.—*Submitted by Francis A. Depagnier, City Island, N. Y.*

IODINE AS A SOLVENT

WE use Iodine to loosen rusted screws and bolts. Apply the Iodine with a small brush and let soak a few minutes.

We also use it to loosen stuck pistons in fractional horsepower compressors. Remove head and base of compressor; paint underside of piston skirt with Iodine, then stand upright and pour about one teaspoon of Iodine on top of piston, let stand for fifteen or twenty minutes, then tap with wooden block and hammer. When piston is moved, oil with light compressor oil then the compressor can be dismantled and overhauled. This has saved the replacement of pistons in every case.—*Submitted by M. Gallagher, San Diego, Calif.*

DISCHARGING REFRIGERANT

A SIMPLE effective method of purging or discharging household refrigerators on the premises, without allowing any fumes to escape, has been used by me very successfully for the past twelve years, and is done as follows:

I carry a twenty foot length of rubber "Prestolite" tubing with quarter inch copper tubing ends, one end equipped with a flare nut, and the other end simply cut off. This fits the holes in practically all drain plates found in kitchen sinks. The tube is inserted through a piece of cardboard or paper large enough to cover the drain plate in the sink, and then inserted in one of the holes in the plate. The paper or cardboard must be held down flat while the water is turned on in the sink, and can be released after enough water is in the sink to hold it down, after which the sink usually must be filled to the brim, in order that the depth of the water will be greater than that in the trap. This will insure the water being pushed out of the trap when purged gases are released.

If the sink is connected to a wash tub this must be filled to a depth greater than the water in the trap also.

Where pure liquid refrigerant is to be discharged, the water in the trap must be drained after the sink and the tub are full to the proper height, otherwise, it would freeze, causing a stoppage, and would cause the fumes to bubble up through the water in the sink.

The above method has proved very effective and safe, and if carried out carefully can be used even in the presence of babies. —*Submitted by Paul Wiemer, Bronx, N. Y.*

The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating equipment to "The Question Box."

COMMENTS ON QUESTION 624

THE use of the coil made of loops in an upward position will cause an oil trap. From 6 to 10 feet of tubing per finned coil, laid on top or bottom, parallel with the coil, will do a very satisfactory job. The service man says that the two Milwaukee Gas Specialties valves are *not* Thermostatic. They are Thermostatic or no drier coil would be needed, and hi-side would be controlled by temperature control, instead of low pressure as is stated—C. H. MORGAN.

COMMENTS ON QUESTION 625

A 12-tube 6-foot aerator cooling 100 gallons of milk per hour with 80 degree temperature drop, and working on storage box, when cooling milk will require a 5-ton valve on aerator and a 7½ H.P. hi-side. It is out of the question to operate this aerator with a 3 H.P. hi-side, and a valve with ¼ in. orifice.—C. H. MORGAN.

EXPANSION VALVE CROSLEY CAPILLARY REFRIGERATOR

QUESTION 633: I have been having trouble with a Crosley capillary domestic refrigerator model A.B. This has a cast white metal evaporator, on which I should like to put an expansion valve. Is this possible with this type of evaporator? I have been informed that an expansion valve requires a continuous tube evaporator. Is this true or would the expansion valve work satisfactorily on the original Crosley evaporator? Please advise whether it is necessary to put the expansion valve in any particular place on this evaporator?

ANSWER: It is not generally very satisfactory to replace a capillary tube with an expansion valve where the evaporator is of the flooded type. It has been done but the valve is always subject to considerable trouble. The only place where an expansion valve will work satisfactorily is on a continuous tube evaporator. A capillary tube, however, can be replaced with a high side float since a high side float also requires a flooded type of evaporator. In installing a high side float, you will probably have to locate it near the machine and it is usually advisable to run a small size tube such as ⅛ tubing to the evaporator in order to prevent frosting of the liquid line from the high side float to the evaporator.

CAPACITY OF UNIT

QUESTION 634: Do you know the capacity in pounds SO_2 for Frigidaire twin condenser coil No. 400788? I had been advised that 10 lbs. was about correct. The machine was overhauled and a new evaporator float valve installed. The machine keeps running and the evaporator only chills and the SO_2 seems to run on through and warm up the receiver tank. If I partly close the evaporator liquid line valve so as to hold back the liquid, then it freezes perfectly, but short cycles on one minute and off one minute. I have in mind that the liquid level is not high enough to shut off the float and what I am doing now is regulating the valve to act as an expansion valve. Can you help me?

ANSWER: I am sorry that I cannot identify the Frigidaire unit from the number you have given me. We do not have any record of serial numbers in this office and we can only make identification by model number and the compressor or complete refrigerator. According to our data, the highest number of pounds of refrigerant contained in any of the refrigerators is 10 pounds; therefore, I assume that if you have 10 pounds in this particular unit, it should be sufficient. It could be, of course, that more refrigerant is required, but it would seem that 10 pounds is enough for the average household unit. There are other things that may cause this same trouble.

One in particular is that the float valve is not properly calibrated, or in other words, is not adjusted to shut off at the proper level of refrigerant. If the float arm is bent too far upward, it would allow too much refrigerant to enter the evaporator before shutting it off. A leaky needle valve in the evaporator can cause the same condition. In both of these cases an additional symptom

of the trouble would be a cold return line indicating liquid refrigerant is passing through the evaporator to the suction line. If it is possible that you can supply us with the model number of this unit, I am sure that we can tell you the exact amount of refrigerant charge.

EVAPORATOR DEFROSTS

QUESTION 635: I have a Crosley Hermetic unit which is charged with Freon-12. This unit works normally from two to four weeks at a time but at intermittent periods during the "on" cycle, the evaporator will defrost and continue to do so until the refrigerator is shut off and allowed to stand idle for approximately three to four hours. If the idle period is shortened to any extent, the unit will still continue to defrost.

ANSWER: It is my understanding that these units are equipped with a high side float and I am of the opinion that the trouble is due to air in the system or uncondensed gases which are collecting in the top of the float. There is a purging and charging connection on top of these floats which you can use to purge off the air. It should require very slight purging at a very slow rate in order to assure a minimum loss of refrigerant.

It is usual practice to put some machine oil on top of the purging screw so that bubbles can be detected coming through as the purging is being done. Open the screw so that the bubbles come through at a slow rate and permit this to continue for perhaps two or three minutes.

There is the possibility that the trouble is caused by moisture in the system which is freezing at the outlet of the float. However, if this system has never been opened for repairs or refrigerant has never been added to it, it would seem unlikely that moisture has entered and I would, therefore, discount this possibility.

SOLDERING STAINLESS STEEL

QUESTION 636: I would like to know how to solder stainless steel with silver solder. I tried everything that I could find in books but haven't found the answer. I used Borax for fluxing and that did not work. What heat should this silver have or what flame with an acetylene flame?

ANSWER: I am inclined to believe that you will have difficulty in soldering stainless steel no matter how you go about it. Judging from the experiences of many writers who make inquiries through this office, stainless steel is the most difficult of all metals to solder. It is not only a question of getting the solder to stick, but there is so much expansion in the metal itself that after the soldering job is done cracks will appear, either at the point of soldering or at some other point where stress may have been created.

For this reason it is usually best to try and use the lowest temperature solder you can obtain and to take the additional precaution of heating the entire evaporator before the soldering is done in order to even out the expansion throughout the entire unit.

I would suggest that you use Sil-Fos Solder if you intend using one of the hard solders. This melts at a temperature of 1300° and can usually be accomplished by either an acetylene torch or Presto Lite torch. I would suggest that you use Lloyd's Silver and Hard Solder Flux which I think can be obtained from most any jobber.

There are two types of Lloyd's Soldering Flux available, one of which was designated for stainless steel. I would, therefore, suggest that in ordering it you mention the fact you are using it on stainless steel. There is another solder known as Alumaweld Solder and Flux, which I believe is thoroughly satisfactory on stainless steel. This solder melts at 500° Fahrenheit but perhaps may not supply as strong a repair as one of the hard solders. The cost of this solder, however, is low enough so that it may be worth your while to have a sample on hand so if your experience with the hard solder is not satisfactory, you can try making the repair with the Alumaweld.

TESTING CONDENSER AND TRANSFORMER

QUESTION 637: Will you please advise how to test a condenser and transformer on a Majestic electric refrigerator No. 101 unit?

ANSWER: We do not have any specific instructions on testing the condenser and transformer equipment on Majestic units. However, according to my information, these two units would have to be tested separately and the only test you can make on each is the usual tests for shorts, opens, or grounds. This, of course, is done in the same manner as on any other equipment, using a test cord in series with a lamp and 110 volt circuit. There is one precaution in testing the condenser and that is that the current must not be kept on for more than a few seconds at a time.

KROMER RESIGNS AS PROGRAM DIRECTOR OF NRSC

FOLLOWING many months of service as National Program Director for the National Refrigeration Service Council, W. R. Kromer has offered his resignation. Mr. Kromer's letter giving his reasons for resigning also presents a brief review of the accomplishments of the training program sponsored by the Council. His letter follows:

In my opinon, the work of the Director of Training for the Refrigeration Industry has been completed. To date there are training schools and local councils organized in 151 cities throughout the United States with a total number of 5,760 students reported enrolled. This number does not include many men trained in vocational schools, Army schools, and technical high schools using our course of study.

The pattern for local organization to train replacements has been provided and I believe the program has accomplished what we have been asked to do by the National Refrigeration War Council and the refrigeration industry. I see no need for further training of replacements as competent men are returning now and more will return from war industries immediately after the German war is ended.

This training program has brought together for the first time the entire industry into one functioning organization. It may be advisable to continue this organization for the protection of the industry as a whole and to insure cooperation between the factions of the industry whose success can be directly measured by the extent of that combined cooperation. There are many problems that affect the future of the industry such as:

1. Distribution of surplus refrigeration equipment.

2. Suggested codes for the protection of the industry to eliminate any repercussion from partly trained men taking advantage of the situation.

3. Assisting in placing of returned servicemen and cooperating in the program to establish returning servicemen in business.

4. Taxes, etc.

I believe that the National Refrigeration War Council should be advised as to the completeness of our national local council organization that the industry be given an opportunity to capitalize on this organization before it disintegrates, if they so wish.

I will be glad to continue to assist existing local councils which are still operating training schools, as recommended at the last meeting of the National Refrigeration Service Council.

I therefore recommend that the balance in the treasury be distributed to the contributors and the training activity of the National Refrigeration Service Council be declared at an end, and that my responsibility as director of the national program be considered at an end as of January 1, 1945.

I have been glad of the opportunity to contribute my time to this program and appreciate the fine cooperation that has been extended to me throughout the entire program from the industry, government agencies, electric operating companies, members of the Service Council, local coordinators and councils, and all those who were interested in this program. I feel that I have been well repaid not only through the satisfaction of having this cooperation make the program a success but also because of the opportunity that this work presented in meeting the many fine people with whom I have associated.

—W. R. KROMER

GOVERNMENT OPENS COURSE IN REFRIGERATOR SERVICE

THE United States Government has opened a war training section to conduct a 200 hour course in household refrigeration service at the Will Rogers Memorial War Training School. This course is open to war plant employees who will agree to work for Fort Worth refrigeration service companies next summer part time. A good course of study has been planned and all the necessary tools and equipment are available. The students will hear lectures, see motion pictures and make actual repairs on refrigerators in this class.

Jack B. Walden has been engaged to conduct the course. Mr. Walden's regular job is with Consolidated Vultee Aircraft Corp. as supervisor in charge of all direct expansion refrigeration and air conditioning.

PATENT SUIT WINS VERDICT

A FEDERAL District Court jury recently found Stewart-Warner Corp. of Chicago guilty of patent infringement and assessed damages of $238,000. The verdict ended a seven weeks' trial before Judge Walter J. LaBuy. Suit was brought by Refrigerator Patents Corp. and Potter Refrigerating Corp., both of Buffalo, and charged that Stewart-Warner had infringed on patents covering new refrigerator designs which include quick freeze units. It is stated that the case will be appealed to a higher court.

R. L. HENDRICKSON JOINS STAFF OF THE REFRIGERATION SERVICE ENGINEER

R. L. HENDRICKSON joined the staff of THE REFRIGERATION SERVICE ENGINEER December 1 as associate editor. He brings to this publication a varied knowledge of sales, service and installation.

R. L. HENDRICKSON

He started his work in the refrigeration industry in 1924 in the service and installation department of Servel, Inc., Los Angeles branch. In 1929 he entered the University of California where he studied specialized subjects in heating, ventilating, thermodynamics, chemistry, physics and mathematics. Later, he returned to Los Angeles and joined the service department of O'Keefe and Merritt Co., with special assignment as "trouble shooter" in Southern California.

In the fall of 1933 he joined the staff of Utilities Engineering Institute, Chicago, where he served for many years as chief engineer and superintendent of shop work. In that capacity, he wrote several lessons on refrigeration, and compiled, revised and edited training courses in both refrigeration and air conditioning.

In December, 1942, he joined the Commercial Trades Institute of Bloomington, Ill., as director of training. In this position he was assigned to instructing army personnel on the maintenance and installation of refrigeration equipment used by the Armed Forces. He also prepared the training program and compiled the lessons used by the Commercial Trades Institute.

Mr. Hendrickson enjoys a wide acquaintanceship in the refrigeration field and has been active for some time in the affairs of the Refrigeration Service Engineers Society in Illinois.

S S S

Economy Refrigeration & Appliance Service, Inc. has been incorporated in Buffalo, N. Y., with a capital of 100 shares. Incorporators are Frederick A. Martzolf, Eleanor Martzolf and Edward Skoney, all of Buffalo.

FROZEN FOODS DISCUSSED AT G.E. PRESS CONFERENCE

MEMBERS of the press including magazine, radio and newspaper representatives were guests of General Electric Consumers Institute at Bridgeport, Conn., Friday, November 3, at a home food freezing conference at which time they witnessed the premier showing of the 45-minute, 16mm., full-color sound film "Frozen Foods" which has been produced by the Consumers Institute as the initial step in a nationwide education plan designed to better acquaint consumers with the correct procedures for freezing foods. Dr. D. K. Tressler, manager of Consumers Institute, directed the day's study. A wide range of subjects were discussed by staff members of Consumers Institute, officials of General Electric Co., and guests.

According to A. M. Sweeney, sales manager of major appliances, more goods, better goods for more and more people at constantly lower and lower prices has been applied by the mechanical household refrigeration industry in the past and it can and should continue to apply it in the postwar period. With two-temperature refrigerators (having a frozen food storage zone) and home freezers coming very prominently into the picture immediately after victory, the sales of refrigerating services should increase tremendously.

In speaking about the needs of consumer education on home freezing of foods from the standpoint of field work, Miss Fern Snider said one of the most helpful means of education to the consumer would be material on the proper methods of handling foods for freezing together with proper instructions for the cooking of frozen foods. There is much help housewives need and want; whether a home freezer serves individual family needs better than refrigerator storage space for frozen foods and how to plan to utilize available freezing space to best advantage.

In explaining how the General Electric Company plans to fit its educational movie "Frozen Foods" into the overall needs of consumer education, L. H. Miller, Manager, Refrigeration Dept., General Electric Co., said the movie was conceived as a tool to augment the work which is being done by editors and workers in the field such as utility groups and state extension agents, locker operators and all those interested in this new method of home food preservation.

REMA HOLDS FALL CONVENTION

THE Fall Conference of the Refrigeration Equipment Manufacturers Association held at Hot Springs, Virginia, November 15-17, 1944, proved one of the most successful in attendance and program interest. Over one hundred and twenty representatives of member organizations were in attendance. New members admitted since the last meeting include Curtis Refrigerating Machine Div., St. Louis, Mo.; McQuay, Inc., Minneapolis, Minn.; Merchant & Evans Co., Philadelphia, Pa.; Puro Filter Corp. of America, New York City; Revere Copper and Brass Inc., Rome, N. Y.; Servel, Inc., Evansville, Ind.; Tyler Fixture Corp., Niles, Mich.; Westinghouse Electric & Mfg. Co., Springfield, Mass.

Membership in REMA has nearly doubled in the past two years. The broad program announced at its Fall Conference, including closer cooperation with jobbers and service engineers, was accepted by the association.

An important new project, that of Public Relations, is designed to acquaint the buying public with the important role refrigeration has played in the war effort and on the home front.

Wednesday Session

O. L. Rose, Dole Refrigerating Co., Chicago, was the first speaker. He described a plan for the extension of REMA credit committee activities.

Product group meetings which occupied an important part of the program, are accomplishing definite results in the solution of the problems peculiar to each group of manufacturers. These meetings are making the association accomplishments more effective for the membership. Topics include the establishment of commercial standards and simplification procedures in cooperation with the Bureau of Standards in Washington; jobber cooperation including sales, help, market surveys; the preparation for service engineers of complete product data for a service engineers manual to be published by the RSES.

H. F. Spoehrer, president Spoehrer-Lange Co., St. Louis, Mo., reported on the expanding activities of the product group program.

G. E. Graff, sales manager of Ranco, Inc., Columbus, O., outlined the activities of the REMA Jobbers Relations Committee.

E. M. Flannery, The Bush Mfg. Co., Hartford, Conn., presented a paper on "The Importance of Membership in REMA."

A. B. Schellenberg, president of REMA and president of the Alco Valve Co., St. Louis, Mo., delivered a comprehensive report on "Our Association Moves Forward." In this paper, Mr. Schellenberg outlined the progress that REMA has made and emphasized the problems to be met during the postwar period.

Thursday Session

This session was devoted to "Markets—Now and Postwar," and the statistical facts provided by the various speakers, indicated the extent of potential markets. The speakers included H. T. McDermott, publisher of THE REFRIGERATION SERVICE ENGINEER, Chicago, and national secretary of The Refrigeration Service Engineers Society. His talk, "The Parts Replacement Market" presented the results of a recent national survey.

J. F. Hood, vice-president of REMA and secretary of the Ansul Chemical Co., Marinette, Wisc., gave the results of a questionnaire survey among members of the Jobbers Association as to their plans for postwar business.

Richard S. Dawson, vice-president of the Alco Valve Co., St. Louis, Mo., interpreted the results of the various task committee reports to WPB and the forecast as to anticipated demands for unitary equipment following V-E Day.

Ben Scholl, Brunner Mfg. Co., Utica, N. Y., read a letter prepared by P. A. Karl of Brunner on "A Product Group Export Suggestion." The export market to Latin America, according to Mr. Scholl, is especially encouraging.

The Thursday afternoon session included a report by C. H. Benson, Imperial Brass Mfg. Co., Chicago, on plans for the REMA All-Industry Exhibit after V-E Day.

George R. Allen, Chairman of REMA Public Relations Committee, and sales manager, Kerotest Mfg. Co., Pittsburgh, Pa., in introducing Ted Sills, president of Sills Inc., Public Relations Counsel, outlined a tentative program of what the association might undertake. Mr. Sills discussed public relations activities in other associations.

Friday Session

This session was devoted to Government—industry relations. A. Gordon Wooten and Robert Hanna, General Industrial Equipment Division, WPB, discussed informally the outlook for the first half of 1945.

Speakers Table at NRSJA Banquet. Left to right: Fred B. Hovey, Chicago, Executive Secretary; J. M. Oberc, Detroit, Member Board of Directors; Prof. B. H. Jennings, Chairman, Chicago Section representing A.S.R.E.; H. G. Stern, Seattle, Member Board of Directors; H. T. McDermott, Publisher, The Refrigeration Service Engineer, representing RSES; H. W. Small, St. Paul, Retiring Acting President; Harold R. McCombs, Denver, President-elect; George F. Taubeneck, Detroit, Publisher, Air Conditioning and Refrigeration News; T. I. Glou, Syracuse, Vice-president; Sterling Smith, Chicago, Sales Manager, Mills Industries, representing C.R.M.A.; I. J. Fajans, New York, Member Board of Directors; A. B. Schellenberg, St. Louis, President, Alco Valve Co., representing REMA. (Photos by Irving Alter, Chicago.)

JOBBERS HOLD TENTH ANNUAL MEETING

AT ITS Tenth Annual Meeting held in Chicago, November 19 to 22, the National Refrigeration Supply Jobbers Association had the largest attendance present at any of its meetings in recent years, and probably a larger attendance than at any previous meeting. There were ninety-eight representatives of members registered.

This meeting differed from recent meetings of members in that it was not a joint meeting with REMA. However, there were many manufacturers who attended the social functions which were open to all in the industry.

New Officers Elected

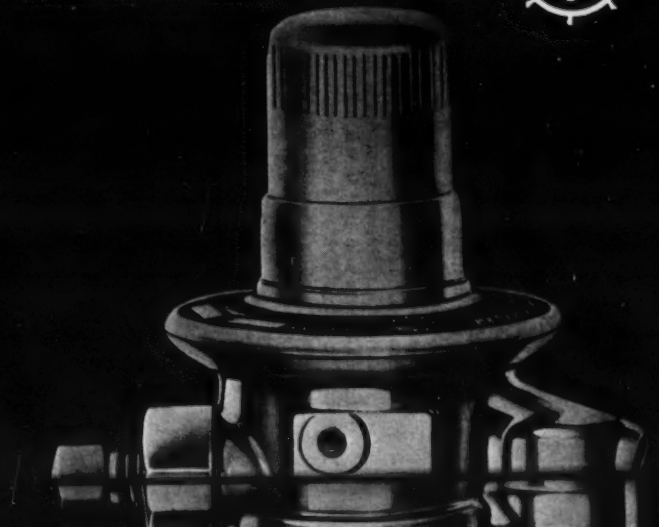
New officers of the Association for 1945 include: H. R. McCombs of Denver, Colo., president; T. I. Glou of Syracuse, N. Y., vice-president; and Otto A. Friemel of St. Louis, Mo., secretary-treasurer.

The present Board of Directors is as follows: H. R. McCombs, president, McCombs Refrigeration Supply Co., Denver 17, Colo.; T. I. Glou, vice-president, Central Service Supply Co., Syracuse 2, N. Y.; Otto A. Friemel, secretary-treasurer, Brass & Copper Sales Co., St. Louis 3, Mo.; L. C. Batho, Manning Equipment, Ltd., Halifax, Nova Scotia, Canada; Irving J. Fajans, Aetna Supply Co., New York 54, N. Y.; R. M. Graves, Graves Refrigeration, Atlanta 3,

NRSJA social events provide opportunity for manufacturers and jobbers to discuss postwar plans. (Photos by Irving Alter, Chicago)

Dependability doesn't happen...

IT'S *BUILT INTO* EVERY AP VALVE



A new design of a famous and popular A-P Valve, the new A-P Model 204 AUTOMATIC Expansion Valve has many new features for improved operation on domestic refrigerators, beverage coolers, serum cabinets, and similar applications. One of these new features is the moisture-proof metal cap, providing absolutely tight seal against air and moisture for protection against freeze-up in the head, yet offering ready access to the adjusting knob.

Compact, small in size, precision-built throughout, sturdy, sensitive and leakproof, Model 204 has an adjustable range of from 15" vacuum to 35 lbs. pressure. Rated at ¼ ton Freon and ½ ton Methyl Chloride and Sulphur Dioxide, it is designed for long-life, dependable service. For further details, write for Bulletin No. 407A.

AUTOMATIC PRODUCTS COMPANY

2454 North Thirty-Second Street • Milwaukee 10, Wisconsin
Export Dept.—13 E. 40th St., New York 16, N. Y.

DEPENDABLE
REFRIGERANT VALVES

Stocked and Sold by Progressive Refrigeration Jobbers Everywhere — Recommended and Installed by Leading Refrigeration Service Engineers.

Ga.; Alex. H. Holcombe, Jr., Victor Sales & Supply Co., Philadelphia 3, Pa.; E. C. Marsden, Marsden & Wasserman, Inc., Hartford 4, Conn.; J. M. Oberc, J. M. Oberc, Inc., Detroit 2, Mich.; Geo. J. Roche, Parks & Hull Appliance Corp., Baltimore 1, Md.; H. W. Small, Thermal Co., Inc., St. Paul 4, Minn.; Harold G. Stern, Refrigerative Supply, Seattle 1, Wash.

The Speakers

Speakers and their subjects at the meeting included: Albert Haring, Professor of Marketing, Indiana University, "The Place of the Refrigeration Supply Jobber in Postwar Distribution"; Report of R. W. Sheperdson, Chairman of Special Committee to study trends in the refrigeration industry; H. T. McDermott, publisher of THE REFRIGERATION SERVICE ENGINEER and National Secretary of the Refrigeration Service Engineers Society, Chicago, "What Are the Plans of Your Customer—The Service Engineer—for Postwar Business"; A. B. Schellenberg, president of Refrigeration Equipment Manufacturers Association, "The Jobbers' Place in Our Maturing Industry"; Report of Alex H. Holcombe, Jr., Chairman of Manufacturers Relations Committee; Report of B. V. Blazer, Chairman of Nominating Committee.

Informal discussion of WPB problems were presented by F. B. Millham, Deputy Chief, Special Equipment Branch, WPB, and Gerald W. Weston, Acting Chief, Electrical & Mechanical Repair Section, Service Trades Division, OCR, WPB.

Annual Dinner

The speaker at the annual dinner, which was exceptionally well attended, was George F. Taubeneck, editor and publisher of Air Conditioning and Refrigeration News, Detroit, Mich.

DEALER SUSPENDED FOR M-28 VIOLATION

THE Lewis Co. of Macon, Ga., on November 29 was suspended from purchase, sale or installation of Freon gas F-12 in a Consent Order by the War Production Board. The company, according to the WPB order, had admitted sale of F-12 in violation of Conservation Order M-28. The Consent Order, it was indicated, would remain in force as long as sale of F-12 is controlled by Order M-28.

SO YOU WANT TO GET INTO BUSINESS

(Continued from page 28)

perhaps both pitch in together on the installation and service work itself.

Partnerships are inclined to be dangerous; people are different and some don't get along well with others. Thus, many men may prefer to buy out a business entirely if they can find one that is suitable and that is for sale. That method also solves many problems that must be overcome in starting a new business from scratch, in which not only must the physical properties be obtained or built, the building, store fixtures, stock, display material, truck, tools and records, but the intangibles that must be acquired,—a reputation, good will, public acceptance—, all of which take time to build and cost actual cash. They represent an investment just as do the material assets.

A great deal of care must be exercised in buying into or buying out a business, especially if it is the first time you have owned a business. Unfortunately, all men are not honest, especially when they are trying to sell something. Ask to see the books. If he has nothing to hide, he will be glad to show you what his assets are; what his liabilities are; how much business he does; what is his gross profit; how much his overhead and expense are; and how much *net* profit he realizes.

There is no set rule of how much a business is worth to a buyer. A true financial statement audited by an accredited firm of auditors will tell the story, but you may not be able to understand just what the figures of a financial statement means; so go to a man who does—your banker. Tell him the whole story, ask his advice and be guided by it.

Here, however, is one fairly good rule to follow in determining the *maximum* amount to pay for or to invest in a small business.

YOUR GROSS INCOME FROM THE BUSINESS FOR THE FIRST FIVE YEARS SHOULD PAY YOU BACK ALL YOU PUT IN IT ORIGINALLY AND WITHOUT FURTHER LIABILITY, PLUS A REASONABLY GOOD LIVING.

A fully equipped refrigeration shop has been opened in Corvallis, Oreg., by Mr. and Mrs. Ray W. Shirley. They will feature refrigeration service to the farmers of Benton and Lincoln Counties.

Henry Diaphragm Relief Valve

Instantaneous Pressure Relief with Fast and Positive Reseating

Design of this relief valve is unique in that it incorporates a diaphragm construction with an unusual seating arrangement. The result is an opening and closing snap-action movement. Large surface area of the pressure actuated diaphragm causes instantaneous relief as compared to graduql opening in conventional spring loaded relief valves. When the pressure in a system reaches the relief point, wire drawing, which may ruin a valve seat, can not take place because there is no slow movement of the valve seat disc in the Henry Diaphragm Relief Valve.

This valve is recommended for protection to a system containing a large charge of freon or methyl chloride refrigerant. It may be employed either for relieving high side or low side to atmosphere. It can also be installed so as to relieve from high to low side of system. It meets the requirements of all existing safety codes. Due to its acknowledged efficiency through dependable performance under all conditions of service, the Henry Diaphragm Relief Valve is today widely used in refrigeration and air conditioning installations of the Army, Navy and Maritime Commission.

The Henry Diaphragm Relief Valve is available in ½" F.P.T., ¾" F.P.T., ⅜" O.D. and ⅞" O.D. Solder connections and at pressures ranging from 90 pounds to 300 pounds per square inch. Each valve is individually adjusted, set at pressures ordered and marked with its rated free air passage capacity per minute. Locking device prevents tampering with pressure setting or changes in setting due to vibration.

FOR FREON and METHYL CHLORIDE REFRIGERANTS

Type 542. With solder connections. Extended tube sockets at inlet and outlet ports prevent transfer of installation heat to internal parts.

Type 541. With female pipe thread connections.

Sold by Leading Jobbers

EXPORT DEPARTMENT
13 E. 40th STREET
NEW YORK, N. Y.
Cables: ARLAB

HENRY VALVE CO.

3260 West Grand Avenue • Chicago 51, Illinois
EXPORT DEPARTMENT, 13 EAST 40th ST., NEW YORK, N. Y.

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR-CONDITIONING
AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

Season's Greetings

AT THIS season when "peace on earth—goodwill toward men" prevails, we pause from our labors to affirm our faith in the fundamental principles of freedom, lighting the whole world, without the obscuring cloud of hate and prejudice.

To our R.S.E.S. members everywhere—at home or fighting on the far-flung battlefronts to preserve our way of life—we send these holiday greetings to you and yours, with a fervent hope that the day of victory may not be far distant.

H. T. McDERMOTT, *Secretary* E. A. PLESSKOTT, *President*

C. BUSCHKOPF	S. B. GARLAND	C. J. DOYLE	W. MARSHALL
W. W. ALLISON	J. K. BUSH	J. L. DRISKELL	W. W. FARR
A. D. McGILL	A. M. PALEN	E. A. SUMMER	A. M. FENWICK

PAUL B. REED

MONTGOMERY, ALA., CHAPTER R.S.E.S. HOST AT STATE MEETING

A TWO-DAY successful conference of members and guests of the R.S.E.S. in Alabama and surrounding states was held at the Whitley Hotel, Montgomery, Ala., November 26th and 27th. Over one hundred fifty members and guests were registered and the planning of the Arrangements Committee of the Chapter under the guidance of S. B. Goodwin, president, and B. R. Capell, secretary-treasurer, contributed greatly to the success of the meeting.

On Sunday a tour of Montgomery was arranged for the guests, and the delegates were welcomed to the city by Hon. Dave Dunn, Mayor of Montgomery. The invocation was by Dr. Gaston Foote of Cloverdale, Ala.

The first speaker was National Secretary H. T. McDermott, whose subject "R.S.E.S. as a National Organization" outlined the relationship of the National Society and the local chapters. He presented some statistical information to indicate the expanding field and possibilities for the refrigeration service and installation engineer in the postwar period.

The dinner on Sunday evening was through the courtesy of the Alabama Jobbers, including Mobile Refrigeration Supply Co., Mobile; Nolin-McInnis, Inc., Montgomery; Refrigeration Supplies Distributor, Birmingham; Teague Hardware Co., Montgomery.

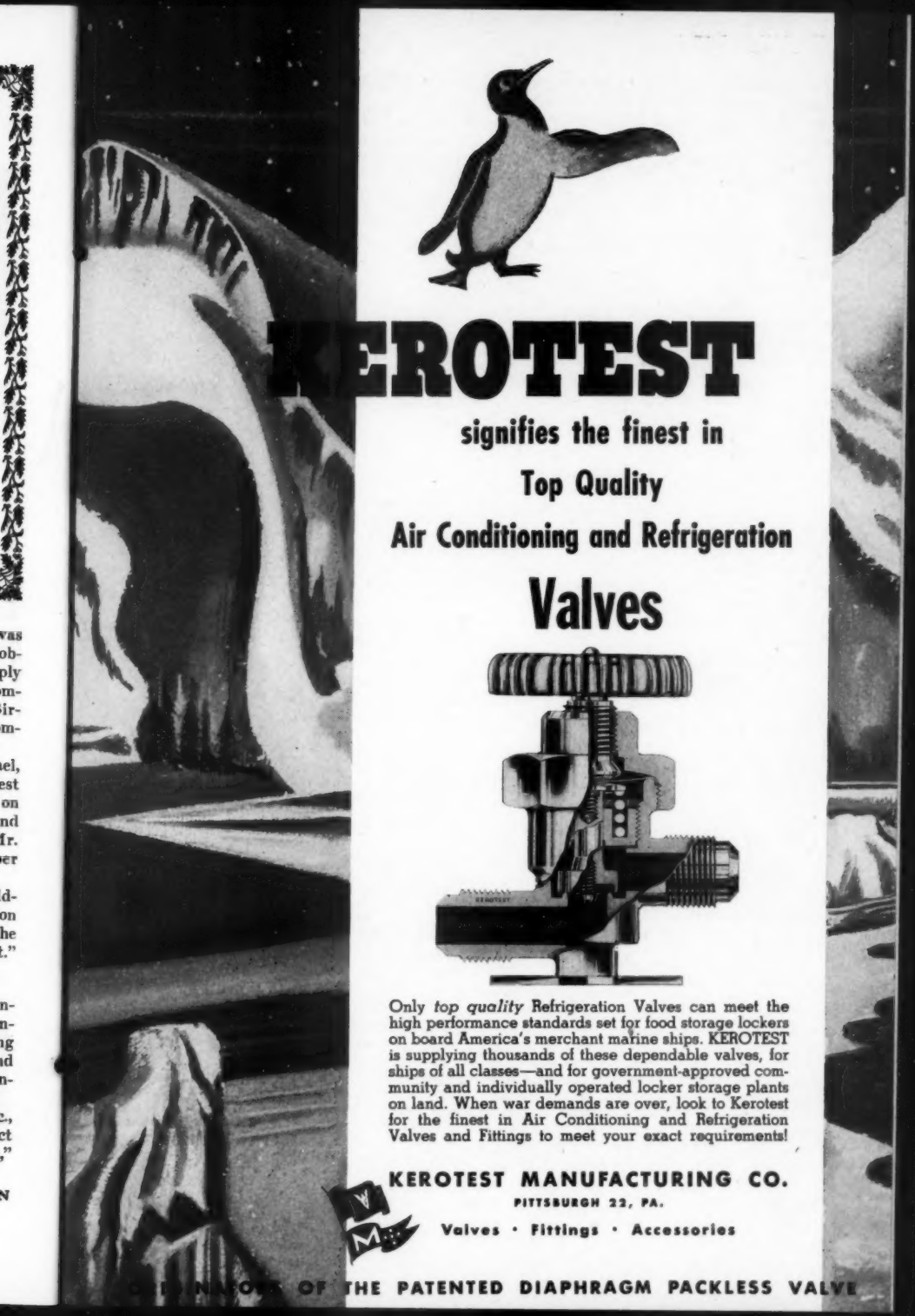
Following the dinner, Rollin H. Israel, sales manager Virginia Smelting Co., West Norfolk, Virginia, presented a color film on the manufacture of sulphur dioxide and methyl chloride at the Virginia factory. Mr. Israel supplemented the picture with a paper and an interesting demonstration.

Herman Goldberg of the Herman Goldberg Co., Chicago, addressed the meeting on the subject "The R.S.E.S. Looks to the Postwar Era for Professional Betterment."

Training of Service Men

On Monday morning, E. V. Oakwood, Instructor of Training, Commercial Trades Institute, Birmingham, discussed the training of potential refrigeration service men, and outlined the course the trainees receive under qualified refrigeration men.

G. E. Graff, sales manager of Ranco, Inc., Columbus, O., discussed the broad subject of "Control Devices for Low Temperature,"


KEROTEST
signifies the finest in
Top Quality
Air Conditioning and Refrigeration
Valves
Only top quality Refrigeration Valves can meet the high performance standards set for food storage lockers on board America's merchant marine ships. KEROTEST is supplying thousands of these dependable valves, for ships of all classes—and for government-approved community and individually operated locker storage plants on land. When war demands are over, look to Kerotest for the finest in Air Conditioning and Refrigeration Valves and Fittings to meet your exact requirements!
KEROTEST MANUFACTURING CO.
PITTSBURGH 22, PA.
Valves • Fittings • Accessories
THE PATENTED DIAPHRAGM PACKLESS VALVE

and presented an interesting picture on the possible servicing difficulties which the service engineer may expect in low temperature work.

R. A. Dawson, vice-president of Alco Valve Co., St. Louis, Mo., conducted an informative educational discussion on "Expansion Valves and their Proper Application." Mr. Dawson's wide experience in practical service work elicited a number of questions from his audience.

Following the luncheon, J. J. Carroll, Davidson Chemical Co., Baltimore, Md., discussed "Dehydration of Refrigerants," and supplemented his paper with a demonstration of the drying properties of Silica-Gel.

J. E. Parker, manufacturer's representative, discussed Day and Night "High Suction Water Coolers and their Industrial Application."

Refrigeration and Air Conditioning Control Devices from the Standpoint of the Service Engineer was the subject of J. G. Trawick, Minneapolis-Honeywell Regulator Co.

One of the high lights of the program was the question and answer period. The board of experts comprised the various speakers on the two-day program. This discussion contributed considerable to the success of the meeting.

Monday evening a banquet and dance was held at a night club, and provided an enjoyable climax to a most successful meeting.

S S S

R.S.E.S. Chapter Notes

CLEVELAND CHAPTER

Cleveland, Ohio, Nov. 9—Because of the holiday, only one meeting was held in November, the evening of November 9 at the El Ranco Room of the Carter Hotel. In the absence of the educational chairman, Paul Spring introduced the speaker of the evening, Norman E. Smith, of the Air Filter Equipment Company, who gave the boys a very interesting talk on the subject of cleaning condensers and air filters, and also gave some very good service hints along this line.

Plans for the Annual Christmas Party were completed and the date set for Saturday, December 16. Arrangements were also made to get presents for the service men in their hands before Christmas. For the Christmas party, the Entertainment Committee has arranged for a full evening of entertainment for both the grownups and the youngsters, with emphasis on the youngsters.

TRI-COUNTY CHAPTER

Aurora, Ill., Nov. 18—The meeting was held at the home of Merle Reichenbacker. A very interesting talk was given by A. M. Rohr, from the Stangaard-Dickerson Corporation, who described in detail the applications of their cold plates for ice cream cabinet conversions, sharp freezer installations, truck body equipment, etc.

KANSAS CITY CHAPTER

Kansas City, Mo., Oct. 4—The meeting was held at the offices of Temperature Engineering. President Visger read a letter from the U. S. Department of Commerce on the subject of refrigeration condensing units. Four applications for membership were read and accepted. Plans were discussed for a Halloween Party and a committee was appointed to arrange for a hall, decorations, etc.

LONG BEACH CHAPTER

Long Beach, Cal., Nov. 11—The Long Beach Chapter has been under a correspondence blackout but has been very bright and fine otherwise. Meetings have been held at least once a month, new officers elected, and many new members secured. At the July meeting, officers were elected as follows: *President,* Carl Ohman; *Vice President,* Alfred Riley; *Secretary,* E. L. Murphy; *Treasurer,* Donald Thompson; *Sergeant-at-Arms,* Tom Ringrose.

TWIN CITIES CHAPTER

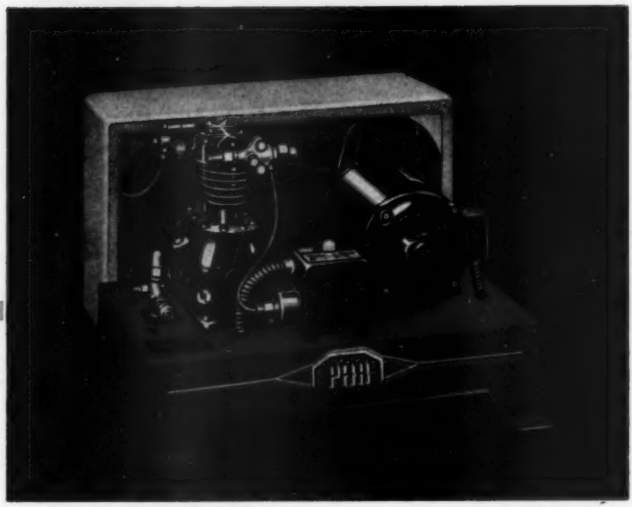
St. Paul, Minn., Nov. 1—This was a business meeting held at the Ryan Hotel. A committee of three was appointed to work on the proposed St. Paul City Ordinance made up of Jack Ehlers, Irvin Rubbelke and Art Palen. The Board of Directors was instructed to meet with the committee to rewrite the By-Laws.

LOS ANGELES CHAPTER

Los Angeles, Cal., Oct. 25—At the regular monthly meeting, Bill Dudley appliance sales manager for Frigidaire in Los Angeles, spoke on "Should Service Organizations Sell?" Mr. Dudley pointed out that service operators had been the means during the war period of maintaining good will for refrigerator manufacturers.

PITTSBURGH CHAPTER

Pittsburgh, Pa., Sept. 25—This regular meeting was held in the Commonwealth Building Annex. C. W. Millson, Jr., of the Chrysler Air Temp Sales Corp. described the product of his corporation and presented T. B. Hollenkamp and Paul M. Burdge of the Service Department who explained in detail the operation of the Chrysler Equipment and answered questions on service.



Par Model HA-2

- Fits like a glove . . . engineered and designed for small display cases and large domestic applications.
- A sturdy ¼ H.P. 2 cylinder air cooled unit with large condenser and bull's-eye sight oil gauge.
- Embodies the 28 PAR features . . . slow speed . . . and fast pump down.

- *Write for illustrated brochure of details.*
- *BY COMPARISON—YOU'LL BUY PAR.*

PAR Division

LYNCH
MANUFACTURING
CORPORATION
Defiance, Ohio, U.S.A.

NIAGARA FRONTIER CHAPTER

Buffalo, N. Y., Sept. 16—The first regular meeting of the Chapter was held at the home of Walter Bobzien. Mr. Bush gave a report on the meeting of the State Chapter at which Codes and Licenses were discussed. Bert Miller, John Bush, and Walter Bobzien were appointed a committee to meet with Union representatives on this question. Bert Miller was appointed chairman of the Educational Committee. Following the meeting a corn and wiener roast was held, at which all reported a good time.

Nov. 10—At the regular meeting held at the Hotel Lafayette, six applicants were accepted as members. The speakers of the evening, Mr. Archibald and Mr. Teuffel of the Jewett Refrigerator Company, spoke on the growth and development of home freezers and gave some service points on the Jewett Arctic Chest.

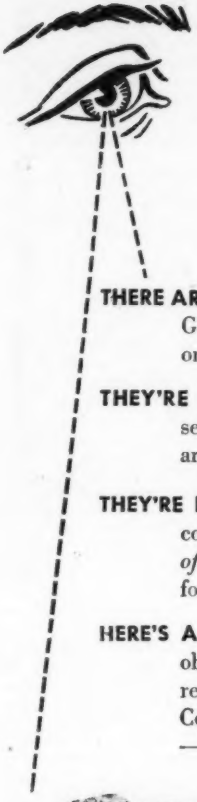
A group of members of the Niagara Frontier Chapter. Below, the officers: Back row, John Bush, Chester Schintzius, Mathew Wroblewski, Ralph Davis. Front row, Wm. Goeckel, A. H. Keirn, John Muller, Pete Rosenberger

MOTOR CITY CHAPTER

Flint, Mich., October 10—This was a joint meeting with the Valley Chapter of Saginaw and Bay City; the Wolverine Chapter of Lansing, and the Motor City Chapter of Flint at the Athletic Club in Flint. After dinner, President Dobbs of the Motor City Chapter introduced the presidents of the visiting chapters, Frank Losee of Valley Chapter, and L. E. Lockwood of Wolverine Chapter. Willis Stafford presented the charter to the Valley Chapter in an impressive ceremony. Through the courtesy of the Goodyear Rubber Company, a timely picture was presented on synthetic rubber.

October 24—Following a business session, the secretary read a very interesting letter from Seaman John Hefley, who is in training at the Navy School located at Ames, Iowa. A day for a special meeting to hold examinations for certificate membership was set for October 31. The article in the October RSE on an advertising program of Milwaukee service concerns was discussed in some detail and it was suggested that the Michigan Chapters consider some sort of advertising along that line, also including a suggestion that customers have their machines overhauled during the slack Winter months instead of waiting until Spring.

Snapshots at the corn and wiener roast, Niagara Frontier Chapter



Keep your eye on the refrigerating machine with a future!

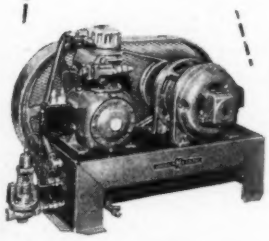
THERE ARE GOOD REASONS for the rapidly growing preference for G-E "Scotch Giant" Condensing Units... reasons that take on added importance in times like these.

THEY'RE RUGGED! No one knows better than you refrigeration service engineers that G-E "Scotch Giant" Condensing Units are sturdily built for dependable performance and long-life.

THEY'RE EFFICIENT! The high refrigeration output and low current consumption of G-E "Scotch Giants"—*under a wide range of actual operating conditions*—is a matter of record. Watt for watt—and Btu for Btu—they're hard to beat!

HERE'S A SUGGESTION that's worth remembering. Wherever you observe a need for dependable, efficient and long-lived refrigeration, there's a prospect for a G-E "Scotch Giant" Condensing Unit... the refrigerating machine with a future —because it's *built to last.*

* * *



General Electric Company, Air Conditioning and Commercial Refrigeration Divisions, Section **47112** *Bloomfield, New Jersey.*

☆ BUY WAR BONDS ☆

"Scotch Giant" Condensing Unit

Hear the General Electric Radio Programs: The "G-E ALL-GIRL ORCHESTRA," Sundays, 10 P. M., E W T, N B C . . . "THE WORLD TODAY" News, Every Weekday, 6:45 P. M., E W T, C B S

GENERAL ELECTRIC

Commercial and Industrial Refrigeration

TRENTON CHAPTER

Trenton, N. J., Oct. 25—For the first time in quite a while the meeting was opened on time and there was an extra large turnout. Two new members were accepted. Arrangements were made to have a plaque made for the Trenton Chapter members in the armed services. The meeting was then turned over to Messrs. Carroll and Thompson of the Davison Chemical Corp., who gave a demonstration and lecture on the use of Silica Gel in drying refrigerants.

Messrs. Carroll and Thompson of Davison Chemical Corp.

Nov. 29.—At this meeting a sound colored movie was shown by the U. S. Steel Corp., "Steel—Man's Servant". It was a very interesting film, giving a picture of steel making from the time the ore leaves the mines until the finished product leaves the mills.

MILE HIGH CHAPTER

Denver, Colo., Nov. 13—Following a brief session, a sound technicolor film was shown entitled "The Shoshone Line," which portrays the bringing of power from the Public Service Company's Shoshone Plant into Denver and other cities.

The educational portion of the program consisted of a talk by Ernest Martin, who sketched a refrigeration system on the blackboard and described a complaint made by the owner of the unit and then defied any one to tell him what the trouble was. Several answers were submitted, only one of which was correct. He then sketched a couple more similar problems with better results from the audience.

BOSTON CHAPTER

Boston, Mass., October 10—The October meeting was held at the Hotel Manger. James McCue reported on the state convention to be held at the Hotel Gardner, Boston, Mass., December 10. Charles Harris also spoke on the convention and mentioned that a new Chapter had been organized at New Haven, Conn., with 34 chapter members.

KEY CITY CHAPTER

Dubuque, Ia., Nov. 8—At this meeting permanent officers were elected as follows: *President,* C. O. Glass; *First Vice President,* Paul Fondell; *Secretary-Treasurer,* Eugene Geisler; *Sergeant-at-Arms,* Wilfred Nescor; *Educational Chairman,* C. J. Brashaw; *General Committee Adviser,* C. J. Brashaw.

A suggestion made by International Secretary, H. T. McDermott, that a Committee be appointed to negotiate with other Iowa Chapters to organize a State Organization was presented by President Glass. It was suggested that a banquet be held for Charter members later in the month.

MONUMENTAL CHAPTER

Baltimore, Md., Nov. 8—Thirty-six members answered the roll at this meeting and eight guests were present. Mr. Roche, Chairman of the Educational Committee introduced Ned Thompson from Davidson Chemical Company, who gave a very interesting talk on dehydrating agents and their application and also a talk on how Silica Gel is made and a demonstration on how Silica Gel removes moisture from refrigerant gases.

SAN DIEGO CHAPTER

San Diego, Cal., Nov. 13—The regular November meeting was held in the banquet rooms of the San Diego Club. Applications for three new members were received and approved. Howard Oldham, chief engineer, U. S. Merchant Marine, in an interesting talk gave a first hand account of how it felt to have a ship torpedoed and sunk under you. Mr. Oldham has had several of these terrifying experiences and once had to spend 19 days in a lifeboat in the Mid-Atlantic. He also told of the type of refrigeration being used to preserve perishable foodstuffs in transport to the fighting fronts.

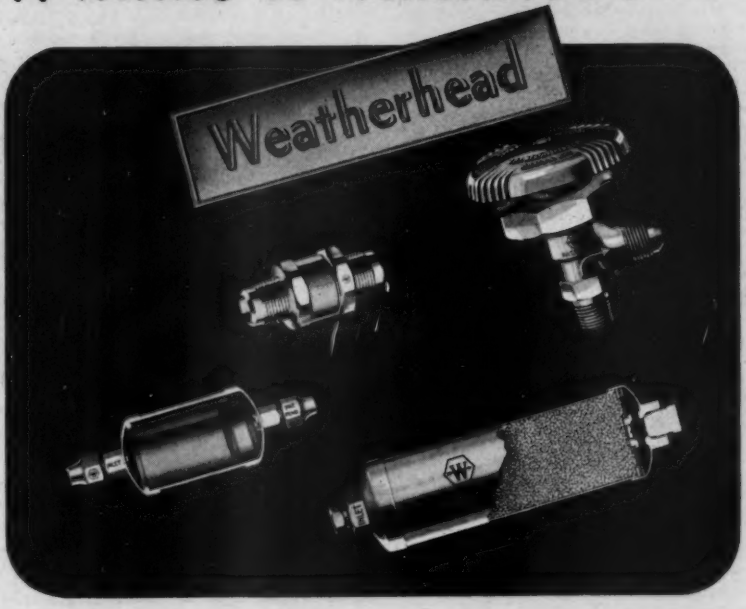
TOLEDO CHAPTER

Toledo, O., October 11—At this meeting applications for membership were received from three, all of whom were accepted. A talking motion picture was shown by the Reynolds Metal Company relating to the aluminum industry from its origin of supply, handling and fabrication, to a finished product. This was followed by another movie covering American military life. The committee working on the Code for Toledo reported satisfactory progress. A presentation has been made to the city officers and the subject will be followed up.

WYOMING VALLEY CHAPTER

Wyoming, Pa., Nov. 13—Following a brief business session a discussion was held on the sale of parts to unauthorized men doing service work. A committee was appointed to investigate this matter. Announcement was made that officers would be elected at the next regular meeting.

A name to remember...



for refrigeration valves, fittings and Accessories

The Weatherhead Company was privileged to serve the refrigeration industry before the war, is serving it to a restricted degree today, and looks forward with anticipation to a general resumption of our trade relationships after the war. If you are engaged in postwar planning now, we invite you to avail yourself of our laboratory, research and engineering departments. You will find us most cooperative.

Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY
CLEVELAND, OHIO

Manufacturers of vital parts for the automotive, aviation, refrigeration and other key industries.

Plants: Cleveland, Columbia City, Ind., Los Angeles
Canada—St. Thomas, Ontario

BUY
WAR BONDS

INTERPROVINCIAL CHAPTER

Ottawa, Ontario, Canada, Oct. 31—At this meeting the officers met with the Executive Committee, the purpose of the meeting being to revive the activities of the Chapter. Much discussion took place after which it was decided to continue the operation of the Chapter and to start meetings early in November.

Montreal, Quebec, Canada—Nov. 1—Following a short business session, A. Pike, reporting for the New Brunswick Chapter said they had started their meetings and now looked forward to a very successful year. The Secretary reported that effective November 1, new regulations would be sent to all regional officers and these would clarify the standing of essential servicemen and would allow for tires for those who are spending 85 per cent of their time in mileage in essential service work.

Mr. Sneath reported on the proposed training plan for service men.

Leaside, Ontario, Canada—Nov. 2—This meeting was preceded by a long discussion with two representatives from the Ontario Government in connection with the training program now under consideration by the I.P.A. The invitation of the Mount Royal Chapter to hold the 1945 convention in Montreal was accepted unanimously.

NEW BRUNSWICK CHAPTER

Charlottestown, N. B., Canada, Oct. 20—The semi-annual meeting was held at the Charlottestown Hotel. After a short business session, a Frigidaire sound film was shown, "How to Get the Most out of your Refrigerator". It was very interesting and was much enjoyed by all. Steve Sherwood, a charter member, gave his personal ideas on how he became a member of RSES and what benefit he derived from being a member. Harry Wallace, of the Wallace Manufacturing Company, Sussex, N. B. gave an informative talk on the post war plans of the refrigeration industry.

At a meeting held June 30, the following officers were elected: *President*, George Larlee; *Vice President*, Phil Palmer; *Second Vice President*, Al Pike; *Secretary-Treasurer*, Norman Tait; *Sergeant-at-Arms*, John Kennedy.

CORN BELT CHAPTER

Bloomington, Ill., Nov. 15—At this regular meeting, reports by the officers, showed the affairs of the Chapter to be in good shape. Two applications for membership were received and accepted. Mr. Hendrickson announced that he had accepted a position with Nickerson & Collins Co. of Chicago, publishers of RSE and for this reason presented his resignation as temporary treasurer and chairman of the Educational Committee. Following the business meeting, Mr. Hendrickson, conducted an examination for a Certificate of Proficiency.

Ladies Auxiliary

NIAGARA FRONTIER AUXILIARY

Buffalo, N. Y., Nov. 10—Seven were present for the regular monthly meeting held at the home of Mrs. Ralph Davis. It was decided to discontinue the idea of forming a blanket club and instead a patch work

Leading members of Niagara Frontier auxiliary. Back row, Mrs. A. H. Kelrn, Mrs. Ed Orsolits, Mrs. John Bush. Front row, Mrs. Wm. Goeckel, Mrs. John Muller, Mrs. Ralph Davis, Mrs. Walter Bobzien

quilt will be made and raffled to raise money to take care of expenses incurred for cards, flowers or gifts.

KANSAS CITY AUXILIARY

Kansas City, Mo., October 4—Following some discussion of Christmas gifts a special committee was appointed to assist the entertainment committee with plans for a Christmas party. Discussion inaugurated at a previous meeting on how to provide more interesting programs was continued.

NEW BOY ARRIVES

Mr. and Mrs. Wm. Goeckel are the proud parents of another budding refrigeration service man, Roger Goeckel who was born November 20, 1944. Bill Goeckel is Treasurer of the Niagara Frontier Chapter, RSES, Buffalo, N. Y.

CANADIAN REFRIGERATOR STOCKS

THERE are fewer than 90 mechanical refrigerators for sale in Canada and these are reserved for hospitals, M. C. Lowe, Administer of Capital Equipment and Electrical Products, Wartime Prices and Trade Board, told the Electrical Appliances Dealers' Association at their recent convention.

JUST OUT! NEW FROM COVER TO COVER!

AUDELS REFRIGERATION and AIR CONDITIONING GUIDE

"AUDELS REFRIGERATION & AIR CONDITIONING GUIDE." 4 Books in One: covering the basic principles, servicing, operation and repair.

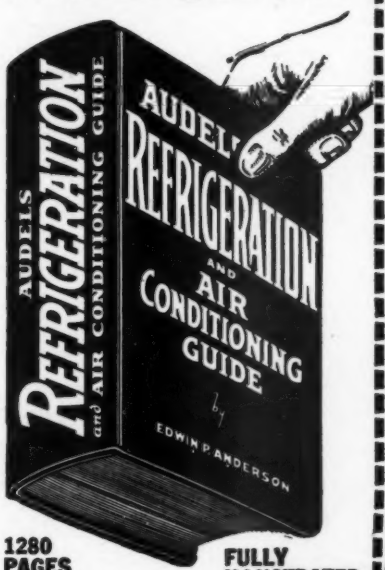
1. HOUSEHOLD REFRIGERATION
2. SPECIAL REFRIGERATION UNITS
3. COMMERCIAL & INDUSTRIAL REFRIGERATION
4. AIR CONDITIONING SYSTEMS

A gold mine of essential important facts

for ENGINEERS, SERVICEMEN, SHOPMEN AND USERS.

A good book is a good friend! Here you will have at your fingers' ends a complete library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, including Freon, Quick Freezing, Lockers, Water Coolers and Air Conditioning Systems. 1280 pages, 46 chapters all fully illustrated and indexed for ready reference and answers to your questions. Size 4¾ x 6½ x 1¾. Flexible covers.

Ask to See It!



1280 PAGES **FULLY ILLUSTRATED**

TO GET THIS ASSISTANCE FOR YOURSELF MARK FIRST BOOK (X) ON MAIL ORDER COUPON NOW. 4 COMPLETE VOLS. PAY ONLY $1 A MO.

THEO. AUDEL & CO., 49 W. 23 ST., NEW YORK 10, N. Y.

CUT HERE

MAIL ORDER

THEO. AUDEL & CO., 49 W. 23 St., New York 10, N.Y.

Please mail me for 7 days' free examination the books marked (X) below. I agree to mail $1 in 7 days on each book or set ordered, and to further mail $1 a month on each book or set ordered until I have paid purchase price.

If I am not satisfied with Guides I will return them.

- ☐ Audels REFRIGERATION & Air Conditioning Guide $4.
- ☐ Audels PUMPS, HYDRAULICS & AIR COMPRESSORS 4.
- ☐ Audels WELDERS GUIDE . . . . . 1.
- ☐ Audels BLUE PRINT READING . . . . . 2.
- ☐ Audels SHEET METAL WORKERS Handy Book . . 1.
- ☐ Audels SHEET METAL PATTERN LAYOUTS . . . 4.
- ☐ Audels AIRCRAFT WORKER . . . . . 1.
- ☐ Audels MATHEMATICS and CALCULATIONS . . . 2.
- ☐ Audels MACHINISTS & TOOLMAKERS Handy Book 4.
- ☐ Audels DIESEL ENGINE MANUAL . . . . . 2.
- ☐ Audels MECHANICAL Dictionary . . . . . 4.
- ☐ Audels AUTOMOBILE GUIDE . . . . . 4.
- ☐ Audels MARINE ENGINEERS Handy Book . . . 4.
- ☐ Audels SHIPFITTERS Handy Book . . . . . 1.
- ☐ Guelles MECHANICAL DRAWING COURSE . . . . 1.
- ☐ Rogers DRAWING and DESIGN . . . . . 2.
- ☐ Audels MILLWRIGHTS and Mechanics Guide . . 4.
- ☐ Audels CARPENTERS and Builders Guides (4 vols.) 6.
- ☐ Audels PLUMBERS and Steamfitters Guides (4 vols.) 6.
- ☐ Audels MASONS and Builders Guides (4 vols.) . 6.
- ☐ Audels PAINTER and DECORATOR . . . . . 2.
- ☐ Audels GARDENERS & GROWERS GUIDES (4 vols.) 6.
- ☐ Audels ENGINEERS and Mechanics Guides Nos. 1, 2, 3, 4, 5, 6, 7 and 8 complete . . . . 12.
- ☐ Audels Answers on Practical ENGINEERING . . 1.
- ☐ Hawkins Aids to ENGINEERS EXAMINATION . . 7.
- ☐ Audels WIRING DIAGRAMS . . . . . 1.
- ☐ Audels Handy Book of PRACTICAL ELECTRICITY . 4.
- ☐ Audels ELECTRICAL POWER CALCULATIONS . . 2.
- ☐ Hawkins ELECTRICAL Guides at $1., each . . . 10.
- ☐ Audels ELECTRONIC DEVICES . . . . . 2.
- ☐ Audels ELECTRIC Dictionary . . . . . 2.
- ☐ Audels RADIOMANS GUIDE . . . . . 4.
- ☐ Audels NEW ELECTRIC LIBRARY at $1.50 a Volume Vols. I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII.

Name_____

Address_____

Occupation_____

Employed by_____ R-11

New and Improved Appliances

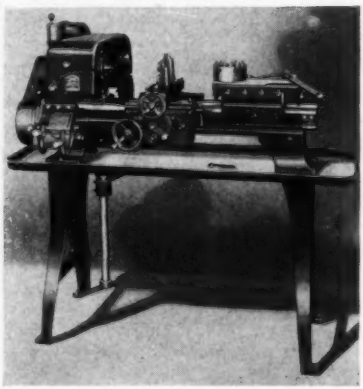
Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Logan Quick Change Gear Turret Lathe

IN DIVERSIFIED industrial fields the Logan No. 840 Quick Change gear turret lathe is establishing a reputation as a rugged, dependable production machine of sustained accuracy, high output, and simple operation. It handles bar stock up to and including ⅝ in diameter. Typical of its advanced design are such features as precision preloaded ball bearing spindle mounting; adjustable gibs to compensate for wear of turret and cross slide; and self lubricating bronze bearings protecting 35 vital points in the lathe. Guaranteeing accuracy are such construction specifications as bed ways ground to within .0005 in. of absolute accurary, total run out of headstock spindle 12 inches from the bearing less than .001 in; lead screw held to within .002 in. in 12 inches; and turret holes bored from the headstock.

The easily operated quick change gear box on the new lathe provides 48 threads and feeds in either direction to the carriage. Simple adjustments of two levers makes screw threads of from 8 to 224 per inch quickly available, and by changing the 24 tooth stud gear for the 48 tooth stud gear furnished with the lathe, additional threads of 4 to 7 per inch are equally accessible. Similarly, longitudinal power feeds from .0015 in. to .1000 in. per revolution on the spindle may be obtained. Power cross feeds are .25 times longitudinal feeds.

To production men, another interesting feature of this lathe is its automatic apron which operates from a spline in the lead screw through a worm drive friction clutch for both longitudinal and cross feeds. For cutting threads, an additional longitudinal drive operates from half nuts on the lead screw. A safety feature makes it impossible to engage both drives at the same time. Worm and gear operate in a bath of oil. The oil bath feature, and the use of steel cut gears and sturdy overall construction, assures long lasting efficient, performance.



The Logan No. 840 Quick Change Gear Turret Lathe

New Decimal Point Locator and Slide Rule

A NEW Decimal Locator and Slide Rule that will determine the decimal point mechanically in involved expressions with results up to 19 places is announced by Pickett & Eckel, 53 W. Jackson Blvd., Chicago 4, Ill.

The device so simplifies slide rule calculations, they declare, that persons with a very limited mathematical background can evaluate and point off problems containing cube root, square root, log and trig factors.

The design of scale arrangements gives the computor five distinct advantages over old style slide rules, according to the producers:

1—Places decimal point with mechanical accuracy up to 19 places in involved expressions. (0.00000000000000-000001496).

2—Gives 30 inch scale accuracy for cube root.

3—Gives 20 inch scale accuracy for square root.

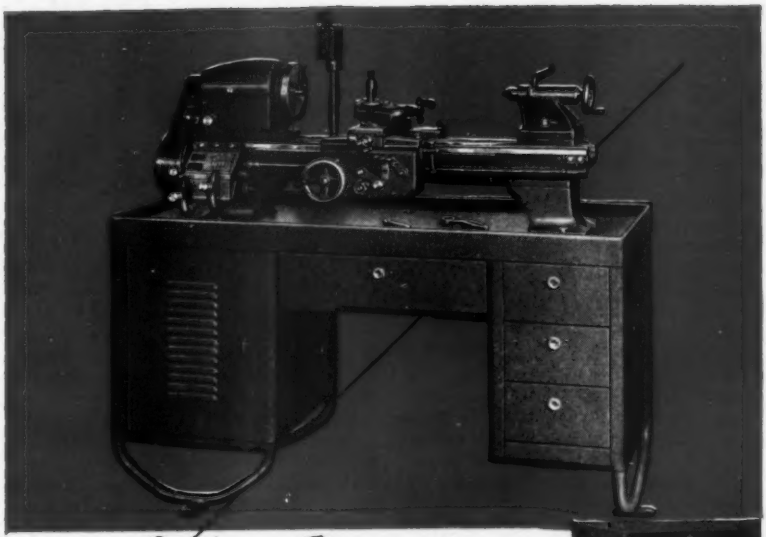
4—Synchronized scales permit result, square root, cube root and log readings to be taken off the same one setting of the hairline.

5—On setting of hairline of the Deci. Point Locator (which can be used with any slide rule) also determines the decimal point location of result, square root, and cube root, up to 19 places.

New Flow Alarm

A NEW flow alarm gives warning if the flow of fluids, either liquids or gases in a line reaches a point which is either too low or too high in relation to the setting of the device. Called the Rota-Sight Flow Alarm it will ring a warning bell or operate a solenoid valve in response to flow rates too high or too low.

The alarm is cast in all metals in sizes from ½ in. to 6 in. The flow section of the alarm is a V-ported metering tube of transparent plastic and a metal float which moves up or down in response to flow rate changes. It is a visual indicator of flow rate and a magnetic extension of the float operates the alarm. It is made by Fischer & Porter Co., Hatboro, Pa.

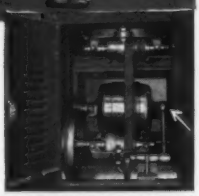


Logan Presents

NEW QUICK CHANGE GEAR CABINET LATHE

With Automatic Apron

The Logan Cabinet Lathe is adaptable to tool room work, for maintenance, training, or production. It is built for durability to standards of precision outstanding in its field. The carriage with friction-feed automatic apron travels over a rugged bed ground to within .0005" of absolute accuracy. Total run-out of headstock spindle 12 inches from the bearing is less than .001". Lead screw is held to within .002" in 12 inches. Precision preloaded ball bearing headstock and self lubricating bronze bearings at 40 vital points minimize friction. Strong steel cabinet has four drawers. Left hand compartment contains underneath motor drive and countershaft. 3-point base makes it steady on any floor. All moving belts and gears enclosed. Write for catalog information.



UNDERNEATH DRIVE: Completely self contained and enclosed in left compartment of cabinet. For easy, safe belt changing, the lever (indicated by white arrow) is pulled outward to release flat belt tension. Adjustments of both flat belt and V-belt tensions are easy to reach. Multiple V-Belt Drive transmits power from cone pulley to spindle.

BRIEF SPECIFICATIONS: Swing over bed, 10½"... bed length, 43⅛"... spindle hole, $^{25}/_{32}$"... precision ground ways; 2 prismatic V-ways; 2 flat ways... 12 spindle speeds, 30 to 1450 r.p.m.... worm drive from lead screw spindle for power feeds ... friction clutch on power feeds ... longitudinal feed .0015" to .1000" per spindle revolution... cross feed .25 times longitudinal feed... half nut drive from lead screw for thread cutting... Threads, 48 selections RH or LH, 4 to 224 per inch.

LOGAN ENGINEERING CO.

4915 WEST LAWRENCE AVE., CHICAGO 30, ILLINOIS

Logan — A NAME TO REMEMBER WHEN YOU THINK OF LATHES

JOHN WYLLIE, JR., DECEASED

THE sudden death of John Wyllie, Jr., general manager of the Temprite Products Corp., Detroit, Mich., Sunday, November 26 came as a great shock to his many friends and business associates in the refrigeration industry.

JOHN WYLLIE, JR.

Mr. Wyllie, at the time of his death, was vice-president and general manager of Temprite Products Corporation and while a comparatively young man, was a widely known veteran of the refrigeration and air conditioning industry. His career started with the Nizer Corporation following his graduation from the University of Michigan in 1924. While with the Nizer organization, Mr. Wyllie organized and conducted the first refrigeration service correspondence school in the world. At one time more than 6,000 students were enrolled in this school.

In 1926 the Nizer Corporation was merged with the Kelvinator Refrigeration Company, and Mr. Wyllie transferred along with the original organization, remaining with Kelvinator approximately eight years. During this time he was special representative to Mr. C. K. Woodbridge, President of the Kelvinator Corporation, and later assumed charge of the Kelvinator commercial sales in the New York City area. In 1933 he returned to the main Kelvinator plant in Detroit where he organized both the commercial engineering department and the sales engineering department for the National organization.

In 1934 he left Kelvinator to take over as General Sales Manager of Temprite Products Corporation and the following year was named Vice-President and General Manager, which position he held until his death.

Mr. Wyllie was very active in industry association work, being one of the founders and presidents of the Refrigeration Equipment Manufacturers Association (REMA) and was also one of the most active members of the American Society of Refrigerating Engineers (ASRE).

Of more recent date he was called upon to act as an advisory member of several war production groups and was chairman of the National Refrigeration Manpower and Training Program, which was organized to relieve the extremely critical shortage of trained refrigeration mechanics brought about by the national draft program.

He was also connected with the Temporary Coast Guard Reserve and had been very active in the education programs required for the operation of the organization.

S S S

GOVERNMENT BUREAUS

(Continued from page 19)

together with the ratings received by dealers and distributors from ultimate consumers, have resulted in a large backlog of unfilled rated orders for several types of scarce equipment, they said. As a result, the critical components are not available in sufficient quantities to fill presently outstanding rated orders for complete assemblies.

During this temporary period, WPB officials explained, it will be necessary for dealers and distributors to extend ratings received from ultimate consumers to replace equipment sold from their inventories.

In the meantime, they said, a study is being made by WPB of the problem and L-38 may be amended so that dealers and distributors can obtain a limited quantity of equipment for inventory.

S S S

SUSPENSION ORDER REINSTATED

THE War Production Board has announced reinstatement of a suspension order against Thompson-Winchester Co., 201-203 State Street, Boston, dealer in food service and refrigeration equipment, which had been stayed pending a hearing on the firm's appeal from the original finding. The order which was originally written to expire December 31 will now continue in effect until next February 11.

The respondent is prohibited from conducting business in refrigeration equipment except farm milk coolers, and from using preference ratings or CMP allotment symbols apart from repair work or to fill Army, Navy or other war agency orders. The suspension resulted from violations of WPB order L-38.

K-15

MAGNETIC PILOTED PISTON VALVES

•

LIQUID AND SUCTION STOP

FOR FREON-METHYL CHLORIDE SULPHUR DIOXIDE—AMMONIA

√ General Controls K-15, two-wire, current failure, high pressure valve handles large capacities with minimum pressure drop. Main valve held open electrically minimizes pressure loss.

Write for Catalog 52.

Wartime manufacturers of Electro-Magnetic and Temperature Controls for Aircraft • Peacetime Producers of Automatic Pressure, Temperature, and Flow Controls.

GENERAL CONTROLS

801 ALLEN AVENUE GLENDALE 1, CALIF.

BRANCHES: Atlanta, Boston, Philadelphia, San Francisco, Denver, Chicago, Kansas City, New York, Cleveland, Detroit, Dallas

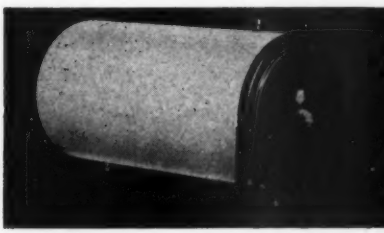
---

NORMAL SUCTION PROCESS WATER COOLERS

6 to 25 gallon capacities.

Compact in design . . . can be mounted on floors, walls or ceilings.

Suitable for drinking water bubbler service, cafeteria or restaurant glass filler service.



WRITE FOR LATEST DATA

COOLER DIVISION

DAY & NIGHT MFG. CO.

MONROVIA • CALIFORNIA

FACTORY REPRESENTATIVES

NEW YORK
A. C. Homeyer, 682 Bdwy. • Marc Shantz, 565 Wash. Blvd.
ST. LOUIS
R. H. Spangler, 3331 Market St. • J. E. Parker, 294 Peachtree, N. E.

STAFFORD CALLED TO SERVICE

WILLIS STAFFORD, until recently engineer with Herman Goldberg Co., Chicago, entered the Navy on November 1, assigned to refrigeration maintenance work. He is temporarily stationed at Bainbridge, Md., awaiting further assignment.

Orr Joins Chicago Seal

DWIGHT D. ORR, with over 12 years experience in the ice cream service field and recently assistant to the director of training, Commercial Trades Institute, Bloomington, Ill., is assuming Mr. Stafford's work until his release and will serve as supervising engineer in charge of inspection and procurement of material for Chicago Seal Co., Chicago.

DWIGHT D. ORR

Mr. Orr has been active in the Refrigeration Service Engineers Society, serving on the Board of Directors of Corn Belt Chapter, as well as the Board of Directors of the Illinois State Association.

S S S

BEN-HUR AWARDED TWO STARS

PROMINENTLY on display on the walls of the general offices of Ben-Hur Mfg. Company, 634 East Keefe Ave., Milwaukee, is a large Army-Navy "E" award flag to which two new stars have been added. These stars, insignia for a continuing record of excellence in the production of particular war material, tell their own story of the manufacturing efficiency of the Ben-Hur plant.

This efficiency should mean much to the people who are interested in the Ben-Hur post-war products. In contacting H. A. Uihlein, president, mention was made of these post-war products. Apparently well in hand, the company has made a good start on one of the post-war products, a new farm and home freezer unit. Newly engineered from the bottom up, the unit is all steel constructed, and its operating efficiency is very high according to C. W. Stoner, chief refrigeration engineer who recently joined Ben-Hur. Dealers and distributors are being contacted, and with good results.

C. W. STONER, well known refrigeration engineer, has accepted the position of chief refrigeration engineer for Ben-Hur. Mr. Stoner was graduated from Purdue University in 1930 with a B.S.M.E. degree. In 1936 he received his M.E. degree. He is a member of the A.S.R.E., and also a member of the N.A.R.R.E., Chicago chapter. In the new position he will have at his disposal one of the most complete and up-to-date laboratories in the country.

S S S

KEROTEST APPOINTMENTS

THE appointment of George R. Allen as general sales manager of the Brass Division of Kerotest Manufacturing Company, Pittsburgh, Pa., effective November 1 has been announced. For the past eight years, Mr. Allen has been associated with Mueller Brass Company, as sales manager of their Standard Products Division. He is a University of Michigan Graduate of the class of 1932. On graduation, he joined the Household Refrigeration Division of Kelvinator Corporation, later moving to the Universal Cooler Company at Detroit. He is secretary and a director of the Refrigeration Equipment Manufacturers Association, and was recently reappointed to the General Refrigeration and Air Conditioning Committee of the War Production Board.

GEORGE ALLEN

AUSTIN JONES

AUSTIN JONES, well-known in the refrigeration parts business and formerly sales promotional manager of Kerotest has recently been appointed head of research and development for the company. While engaged as a manufacturer's representative in Omaha, Mr. Jones contacted many chapters of the Refrigeration Service Engineers Society and helped to organize the Missouri Valley Chapter. One of his principal hobbies is photography, and he has taken many pictures of personalities at various industry meetings.

VISOLEAK

is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain – just like the discoloration on a carburetor in which ethyl gasoline has been used. Can be used *safely* and *effectively* with any type of refrigerant.

See your jobber today. If he has not stocked Visoleak write for complete information.

Wholesale Prices		Save 10% on case lots
4 ounce bottle	$1.00	48 bottles
8 ounce bottle	1.75	24 bottles
1 pint bottle	3.00	24 bottles
1 quart bottle	5.00	12 bottles
1 gallon can	16.00	6 cans

WESTERN THERMAL EQUIPMENT CO.
5141 Angeles Vista, Los Angeles 43, Calif.

HOME-PROVEN BY THOUSANDS
Many QUICFREZ Farm Locker Plants have already been in use for over 6 years.
Write for literature.
SANITARY REFRIGERATOR CO.
Fond du Lac, Wisconsin
SANITARY Quicfrez

KELVINATOR TO BUILD POSTWAR HOME FREEZER

PRICE of the home freezers with which Kelvinator will enter the market when production is possible will be "something less than that of the average good refrigerator", Charles T. Lawson, vice president of Nash-Kelvinator Corporation in charge of Kelvinator sales, announced.

While the price range of the new Kelvinator home freezers have of course not been set, Lawson said that the company's current retail price estimates were the result of extensive studies based on Kelvinator's long experience in the ice cream cabinet field.

The home freezers to be offered by the company will be powered by the Polarsphere sealed units used in other refrigeration products of the company, Lawson said.

S S S

U. S. RUBBER COMPANY PURCHASES L. H. GILMER COMPANY

THE United States Rubber Company has agreed to purchase the assets and business of the L. H. Gilmer Company of Philadelphia, manufacturers of industrial V-belts, it is announced by Herbert E. Smith, president of the rubber company. Mr. Smith said that the purchase was made to round out further the mechanical goods division of the rubber company. He added that no change in the management or operations of the Gilmer company is contemplated. John S. Krauss, president, will continue in the active management of this business.

JOHN S. KRAUSS

The Gilmer company has been known since 1907 as manufacturers of endless belts. The line consists of V-belts for the industrial, automotive and household appliance fields; and flat and round endless belts for power transmission, certain of them of patented construction designed for special-purpose industrial applications. V-belting for use with connectors and flat belting in rolls complete the belting line. The company also makes a line of moulded tire treads for industrial truck manufacturers.

ANSUL MAKING POSTWAR PLANS

JOHN A. SARGENT, formerly assistant manager of the Menominee and Marinette Light & Traction Company, a subsidiary of the Wisconsin Public Service Corporation, has been appointed planning engineer for Ansul Chemical Company and its Dugas Division. Sargent began his new duties September 18.

JOHN A. SARGENT

Engaged in a broad postwar program of progress and expansion, Ansul is looking forward to expanded markets for its products after the war. Mr. Sargent has been assigned the important role of coordinating the thoughts, ideas and activities of the various Ansul departments. A community leader and public speaker, he was with the Wisconsin Public Service Corporation since 1920, except for a period of four years, 1924 to 1928, during which time he attended the University of Wisconsin where he obtained a degree in electrical engineering.

S S S

"UNFREEZING" TECHNIQUE SPEEDS PRODUCTION OF LENSES

ONE of many streamlined methods that has stepped up production of precision optical lenses nearly 1000 per cent at the optics plant of Bendix Aviation Corporation's Eclipse-Pioneer Division, Hackensack, N. J., is "unfreezing" optical lenses from the pitch that fastens them to polishing blocks. Melting the pitch, the former slow and sticky process, has been replaced by "freezing" the blocks at sub-zero temperatures, which makes it possible to remove the lenses in a few seconds. The process is illustrated on the front cover of this issue.

S S S

JONES HEADS OPA ADVISORY COMMITTEE

W. PAUL JONES, vice president in charge of the Refrigerator Division of Philco Corporation, has been elected chairman of the OPA domestic mechanical refrigerator industry advisory committee. Mr. Jones, who is one of the pioneers in the refrigerator industry, joined Philco in 1938 to head the company's refrigerator division.

REPLACEMENT CAPACITORS *that keep 'em running*

You can service those wornout motor capacitors and keep their electric refrigerators running for the duration at least, with Aerovox "Victory" replacements. And at a nice profit, too!

Just 28 universal numbers comprise the Aerovox Victory line. 22 for 110-volt, 6 for 220-volt. Yet these few numbers take care of better than 90% of all replacements. The handy Aerovox conversion chart indicates the "Victory" equivalent for any previously available type.

ARMY E NAVY

AEROVOX *Capacitors*

INDIVIDUALLY TESTED

AEROVOX CORP., NEW BEDFORD, MASS., U. S. A.
In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.
Export: 13 E. 40 St., New York 16, N.Y. Cable: "ARLAB"

Injurious FUMES!

● Whether refrigeration gases are fatal or merely irritating, maximum protection is a safety requirement. The first step is to disperse fumes if possible. Then . . .

call for CESCO

CESCO's No. 605 Fume Kit offers *triple protection* to refrigeration servicemen. Quick-change filter cartridges provide safety against ammonia fumes, methyl-chloride and sulphur-dioxide . . . *all in one convenient kit.* The soft molded rubber face-piece of the fume mask, and the instantly adjustable headgear, assure a gas-tight, comfortable fit for every wearer. Large safety glass lenses give perfect visibility.

For full information, write for CESCO's No. 605 bulletin today.

CESCO

CHICAGO EYE SHIELD CO.
2344 Warren Boulevard
Chicago 12, Illinois

CESCO
FOR SAFETY

SIMONS HEADS ADVERTISING

GEORGE E. SIMONS has been appointed manager of advertising and sales promotion for General Electric's air conditioning and commercial refrigeration divisions.

GEORGE E. SIMONS

Prior to his new appointment, which became effective October 16, Mr. Simons was advertising manager of the General Electric X-Ray Corporation in Chicago. He attended the University of Michigan and joined G-E's publicity department at Schenectady in 1930. That same year he was transferred to the Chicago office of the company as district publicity representative. In 1935 he was named advertising manager of the G-E X-Ray Corporation.

After the war started Mr. Simons worked on many special wartime functions in addition to his advertising activities. He was in charge of ordnance manufacture at the G-E X-Ray Corp. and served as vice chairman of the special events division of the Illinois War Finance Committee.

S S S

NEW PENN CHIEF ENGINEER

DONALD G. CAMERON, well-known electrical engineer, has been appointed recently to head the Engineering Department of Penn Electric Switch Co., Goshen, Ind.

D. G. CAMERON

In selecting Mr. Cameron for this highly important job, the company acquired the services of a man who is not only well-versed in scientific engineering design but is also experienced in modern manufacturing methods. A graduate electrical engineer, he formerly was associated for 15 years with General Electric Co., and in recent years, was superintendent of that company's Aircraft Instrument Division at West Lynn, Mass.

ALCO VALVE APPOINTMENTS

TWO appointments on the engineering staff have been announced by the Alco Valve Co., St. Louis, manufacturers of refrigeration control valves.

ARLEY L. BAKER

HUGO C. SMITH

ARLEY L. BAKER has been named application engineer. Mr. Baker comes to Alco from Curtis Manufacturing Co. where, from 1939 until 1944, he held the position of district representative for the north central territory. His headquarters will be at the main office, in St. Louis.

HUGO C. SMITH has recently been added to the staff as field engineer. His territory, with headquarters at Cleveland, will include Ohio, West Virginia and the western part of Pennsylvania. Mr. Smith spent ten years with Frigidaire Sales Co. and five with Carrier Corp.

S S S

STENSON JOINS LYNCH CORP.

THE appointment of D. E. Stenson as Eastern District Sales Manager has just been announced by Mr. R. L. Sears, Sales Manager Par Division, of the Lynch Manufacturing Corp., Defiance, Ohio. Mr. Stenson has many years experience in the Jobbing field in New York, Chicago and Boston as a background for his new position. His headquarters will be in Boston where he will have charge of all sales in the New England territory for Par Condensing Units.

D. E. STENSON

$ $ $ $ $ $ $

Time and Service *are your Assets*

GET ADDITIONAL PROFITS

SERVICING

METER-MISERS

WITH

HERVEEN

the IDEAL

REPLACEMENT GAS

YOU profit on both time and service when you use *Herveen*. It is a time saver because 75% of Meter-Miser service calls are the result of gas shortage.

You save time by providing immediate service and service builds customer good-will for post war business.

Don't turn down the profits on Meter-Miser servicing—be sure you have a drum of Herveen in your service truck as well as in the shop.

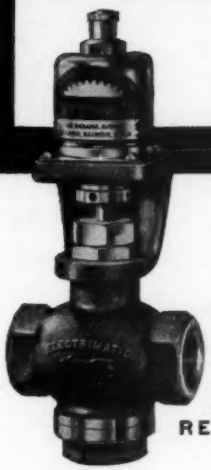
Most jobbers carry Herveen in stock—if yours don't, write direct to

MODERN GAS CO., Inc.

Manufacturers and Refiners

1034 Bedford Ave., Brooklyn 5, N.Y.

EFFICIENT...
ECONOMICAL



TYPE
WP
PRESSURE
ACTUATED
REGULATING
VALVES

Individually tested for efficient, economical operation. WP regulating valves may be mounted in any position and will give lasting, trouble-free performance. Brass body, two ply power bellows and corrosion resistant materials for all internal parts. They are designed not only to start and stop the flow of water but also to feed the economic amount of cooling water to secure the proper condensing pressure without waste. The water flow increases and decreases with the rise and fall of actuating pressure.

WP regulating valves are available in ⅛", ½" and ¾" FPT sizes and other valves of other types are available in sizes ranging from ⅜" to 2" FPT.

Write for a copy of our latest catalog.

Electrimatic

2100 INDIANA AVENUE
CHICAGO 16, ILL.

SERVEL CUSTOMER REPAIR SATISFACTION

By using genuine Servel parts, you help assure your customers of complete repair satisfaction. You know what this means in creating good-will—paving the way for post-war sales. So accept only Servel-built parts. Your Servel authorized jobber has them.

SERVEL, Inc. Electric Refrigeration and Air Conditioning Division
Evansville 20, Indiana

REFRIGERATION • PARTS
SUPPLIES • EQUIPMENT

AIRO SERVICE Where and When You Want 'Em *FAST!*

Yes, AIRO SERVICE means fast deliveries *to every state in the country* . . . gives YOUR Service Shop necessary parts and supplies to meet these unexpected RUSH JOBS!

"Smart" Servicemen are tying up NOW with Airo Service because the speedy delivery being given by Airo NOW is strong indication of the superior, reliable, split-second service to be anticipated AFTER the War.

You'll Like to Buy from Airo Supply!

Send NOW for the Airo Victory Catalog, listing Refrigeration parts, tools, and equipment. Use your letterhead, please.

WHOLESALE ONLY
AIRO SUPPLY CO.
Dept. A, 2732 N. Ashland Ave.
Chicago 14, Illinois

SURPLUS REFRIGERATION SUPPLIES
¼ H. P. to 3 H. P. UNITS
ICE CREAM CABINETS
Send for Our Surplus Stock List!
EDISON COOLING CORP.
310 E. 149th St., New York City 51

DOMESTIC CONTROLS . . . $1.90
AUTOMATIC VALVES . . . $1.50
THERMOSTATIC VALVES . $2.75
REPAIRED OR EXCHANGED
▼
LYK-NU CONTROL SERVICE
2209 N. Karlov Ave., Chicago 39, Ill.

STANGARD
Prime Surface
COLD PLATES
Maximum Refrigeration Efficiency
THE STANGARD-DICKERSON CORP.
46-76 OLIVER STREET, NEWARK, NEW JERSEY

1944 CATALOG

Write for your copy on your letterhead

SERVICE PARTS CO.

2511 Lake St. **Melrose Park, Ill.**

CONTROL REPAIR SERVICE

Because of the shortage of materials, 1944 will be a very busy one for the Service Engineers. Fewer replacement parts will be available, necessitating more repairs.

Why not send your control jobs to us? We recondition controls equal to new at a small cost. All our work guaranteed for one year. Prices on request.

UNITED SPEEDOMETER REPAIR CO.

342 West 70th Street

New York City 23

Getting Nowhere *FAST*

There are some men in refrigeration (newcomers, as well as old-timers), who keep plugging along, getting nowhere fast. Oh yes, they know the refrigeration business well enough to dub their way along—and that's about all. Compare them with the boys who know that, to keep on making the big money in the refrigeration business, you've got to be ready for anything—know all the answers—*be progressive.*

U.E.I. BALANCED TRAINING

(home-study instruction *balanced* with actual shop practice) is designed to help a man *make headway,* no matter how old or young he is in the business. It is the refrigeration and air conditioning training that has been proving its value for the past 17 years.

See the coupon below? Plenty of men—men in practically every branch of refrigeration work—have used a similar coupon to find out how to start getting SOMEWHERE instead of nowhere, by means of interesting spare-time training. Do you think *you* should send it in?

FREE FACTS

UTILITIES *Engineering Institute*

1314 W. Belden Ave.
Dept. 45, Chicago 14, Ill.

Please give me more information about Refrigeration and Air Conditioning Training, as promised in your Refrigeration Service Engineer December, 1944 ad.

Name .....

Address .....

City..... State.....

Season's Greetings and Congratulations

To The Refrigeration Servicemen For The Hard Work And Long Hours You Have Spent Maintaining The Nation's Essential Refrigeration Equipment.

CHASE REFRIGERATION SUPPLY COMPANY

(CHASE BLDG.)

546-48 W. 119th St. PHONE PULLMAN 5125 **Chicago 28, Ill.**

SINCE 1921
HUNDREDS OF FIRMS *have used* *Millions* OF
AUTO-DIESEL
LADLE TEMPERED PISTON RINGS

For nearly a quarter of a century AUTO-DIESEL "Ladle Tempered" Piston Rings have been used as original equipment and replacement for Diesel powered units of all types—stationary and mobile units and for hydraulic and pneumatic operated industrial equipment. The fact that HUNDREDS of firms have used millions of AUTO-DIESEL "Ladle Tempered" Piston Rings is due to the uniform high quality that has been maintained down through the years.

Write for Information

THE AUTO-DIESEL PISTON RING CO.

3157 Superior Ave. CLEVELAND 14, OHIO

QUALITY RINGS SINCE 1921

AIRCO

REFRIGERATION Parts REG'D CANADA

- CONTROLS
- GASKETS
- VALVES
- BELTS, Etc.

1374
NOTRE DAME W
MONTREAL

AUTOMATIC EXPANSION VALVES

repaired or exchanged
at $1.75 F.O.B. Chicago

☆ ☆ ☆

Until further notice we will be unable to accept other types of repair work.

ALL WORK GUARANTEED FOR 90 DAYS

NEW DUTY
2424 Irving Park Blvd., CHICAGO 18

A TOUGH CUSTOMER!

Who is the world's toughest customer? The United States Army is tough on the battlefront and tough in buying supplies and services for their fighting men.

When looking for training in refrigeration, remember Commercial Trades' record of being the *only* civilian school in the country engaged to train army men in refrigeration.

This same training is available to you. Resident and combination home study and shop courses.

Write for free booklet—Veterans ask about GI training

COMMERCIAL TRADES INSTITUTE

School of Refrigeration and Air Conditioning

Chicago, Ill.
209 W. Jackson Blvd.

Birmingham, Ala.
200 S. 20th St.

SUPPLY HEADQUARTERS FOR THE SERVICE MAN

Our large stock insures you rapid service now. The parts you need are in our stock. For all refrigeration supplies, call or write

Our South Side Branch, 809 W. 74th St., Chicago, has a complete stock for your convenience.

Automatic
HEATING & COOLING SUPPLY
DIVISION OF WEIL-McLAIN COMPANY
647 West Lake Street Chicago 6, Illinois

AMCOIL UNIT COOLERS

For Immediate Delivery

Temperatures Down to 34° F. Compact—Efficient Available from Stock

Can't Get It? Try BLYTHE

—where experienced service men know the most complete stock of PARTS and SUPPLIES is available. Don't forget — Blythe is your stock room.

Send us your inquiries on your letterhead.

ALWAYS DEPEND on BLYTHE
H. W. BLYTHE CO., 2334 South Michigan Avenue, **CHICAGO 16**

Controls Repaired & Rebuilt

Just Mail In Controls — We Handle The Rest

COMMERCIAL—DOMESTIC—INDUSTRIAL

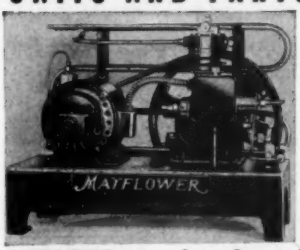
One Year Guarantee
Each Control Reset and Cycle Tested

Domestic Cold Controls (Modern Type)	$2.00
Commercial Controls (Pres. or Temp.)	2.50
Commercial Dual Controls	3.00
Automatic Water Valves	2.00
Automatic Expansion Valves	1.75
Thermostatic Expansion Valves	3.00

All Prices F.O.B. Chicago and subject to change without notice.

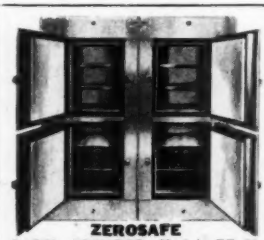
ACME CONTROL SERVICE
4813 N. Kedvale Avenue—Chicago 30, Illinois
Phone AVEnue 8532

MAYFLOWER
UNITS AND PARTS



COMPLETE stocks of genuine Mayflower air and water-cooled Condensing Units, and all Mayflower Parts, are now available to meet your priority requirements. Service men, consult your jobbers, or write us direct. Jobbers, we solicit your inquiries.

MAYFLOWER PRODUCTS, Inc.
13 S. 5th St.
Richmond, Ind.



ZEROSAFE
FARM FREEZER Model FF-60
Capacity: 60 cu. ft.
Other models from 15 to 80 cu. ft.

IT'S NO SECRET . . .

There's no secrecy about Wilson Post-War Plans . . . Wilson Milk-Cooling Systems, Wilson Reach-Ins and Walk-Ins for both normal and low-temperature applications, and Wilson Farm Freezers will continue to emphasize the designs, materials and workmanship which have always distinguished Wilson Cabinet Company products.

The Wilson Farm Freezer illustrated is for a farm family of six.

FOR YOUR PERSONAL USE: Let us send you our booklet on the home freezing of foods . . . It's free to you . . . Address: Dept. 14

WILSON CABINET CO., Smyrna, Delaware

Season's Greetings

In these times of sober thinking and effort directed toward a complete victory for democracy, the FRED C. KRAMER CO. takes this opportunity to extend to its old friends and new, HOLIDAY GREETINGS, and the sincere wish that the year 1945 may bring peace and happiness to them and their loved ones.

FRED C. KRAMER COMPANY

212 N. Jefferson St. Tel. Haymarket 0555 Chicago 6, Illinois

WEST COAST CONTROL SERVICE

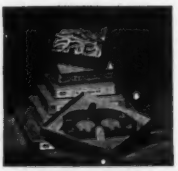
Cold Controls · Pressure Switches

One year guarantee on all repairs

Original Factory Specifications

UTILITY THERMOSTAT CO.
4011 Halldale Ave., Los Angeles 37, Calif.

GASKETS — SPEED VICTORY



Write for complete catalog.

• Until Victory is won, war orders come first. Today, our gasket service for every refrigeration need is helping speed war production. Under these conditions, delays in filling other orders are unavoidable.

CHICAGO-WILCOX MFG. CO.
7701 Avalon Ave. Chicago 19, Illinois

DOLE

VACUUM PLATE

COOLING and FREEZING UNITS

CHICAGO

USE "CLEAN-A-COIL"

FOR CLEANING WATER COOLED CONDENSERS

CONSULT YOUR LOCAL JOBBER

STANDARD SOLVENT CO.
CHICAGO

PUT RUST TO WORK!

Brush or spray Nobs Glazecoat directly on rust. Rust aids in forming a permanent thermo-plastic coating that is not affected by water, alcohols, dilute acids, or alkalies. Prevents further rusting. Stands heat to 400° F. Covers about 300 sq. feet per gallon.

Price.....$3.50 per gal. F.O.B. Los Angeles

NOBS CHEMICAL COMPANY
2465 East 53rd Street, Los Angeles 11, Calif.
Seattle San Francisco

THE HARRY ALTER CO.

1728 S. Michigan Ave. Chicago, Ill. — Two Big Warehouses to Serve You — 134 Lafayette St. New York, N. Y.

DOMESTIC CONTROLS.....$2.00
AUTOMATIC VALVES..... 1.50
THERMOSTATIC VALVES.... 3.00

Repaired or exchanged also sold outright at slightly higher prices.

Prices f.o.b. Chicago

All work done on money back guarantee

REFRIGERATION SURPLUS DEALERS
2209 N. Karlov Ave. Chicago 39, Ill.

Send for 1944 Catalogue

REFRIGERATION EQUIPMENT CO.
Refrigeration Parts Division
101 E. 24th Street, Kansas City 8, Mo.

WASHER PARTS DIVISION
1430 Walnut Street
Kansas City 6, Mo.

Classified Ads

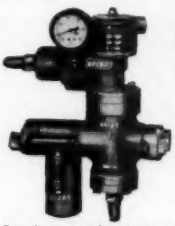
POSITION WANTED—Man, 40, experienced in Commercial, household and air-conditioning, desires position with a reliable Refrigeration Service firm. Have my own truck, equipped to do service in the field. Prefer commercial. Would consider service managership under proper conditions. Please state position in first letter. Address Box DC-2, The Refrigeration Service Engineer, 433 N. Waller Ave., Chicago 44, Illinois.

WANTED—REFRIGERATION SERVICE MEN. We offer steady employment—High wages, plus Car Allowance and Commissions on new equipment sales to experienced domestic and commercial servicemen. Excellent opportunity for advancement. Make arrangements now to work for a large, long established Service Company holding service contracts with national manufacturers, such as Kelvinator, Stewart Warner, Hot Point and others. Write us today, giving experience, background, and other pertinent details. Murphy & Miller, Inc., 1326 S. Michigan Ave., Chicago 5, Illinois.

WANTED—Ice Maker—5 ton capacity—24 hours. Write make, age, condition and price. McCarron Refrigeration Sales & Service, Medford, Wisconsin.

WANTED—Motors—⅛-⅙-¼ h.p., 3450 r.p.m., 110 volt, single phase, 60 cycles, any make. Can be for flange mounting. Write Walter E. Heise, Commercial Refrigeration, 115 Griffin St., Syracuse 7, New York.

FOR SALE—Exceptional opportunity to purchase my entire stock of refrigeration parts at less than wholesale prices—all pre-war—no priority. Household and commercial—belts, controls, expansion valves, valve plates, seals, etc. Write or wire for inventory list, and prices—you'll have to hurry—this won't last long. William E. Anglin, 518 Casselberry, Evansville, Indiana.



Regulator and Stop Valve

Write for Catalog

Designers and Manufacturers of
AUTOMATIC BACK PRESSURE REGULATING and CAPACITY CONTROL VALVES
SOLENOID VALVES
STA-TITE SAFETY RELIEF VALVES
STRAINERS
HUBBELL CORPORATION
319 N. Albany Ave., Chicago 12, Ill.

JARROW
REPLACEMENT
DOOR GASKETS
Your customers will always be satisfied with a JARROW gasket. Odorless and grease resistant.
INSIST UPON JARROW
JARROW PRODUCTS
428 North La Salle St. Chicago, Ill.

ANSUL

ICE-X

CHASES
MOISTURE
TROUBLES

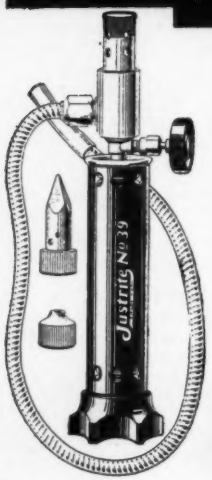
ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.

ORDER FROM YOUR JOBBER OR—

THE HARRY ALTER CO. 1728 S. MICHIGAN AVE. CHICAGO 16, ILLINOIS

JOBBERS: WRITE FOR SPECIAL PROPOSITION!

Speed up YOUR REFRIGERATION SERVICE



3 Tools in ONE...JUSTRITE

This handy tool is built to serve three important repair service functions. 1—As a gas leak detector for systems which use Freon, Carrene and other non-combustible Halide gases. 2—As a light-weight "Power-Flame" soldering set for repairing connections or wiring. 3—As a blow torch for "sweating" joints and similar blow torch assignments.

Quickly convertible from one service to the other. All parts built of the finest material for long wear and rugged service.

Available now for priority orders. Ask your jobber.

JUSTRITE MANUFACTURING COMPANY
2063 North Southport Avenue, Dept. B-7, Chicago 14, Ill.

JUSTRITE *Safety Products*

SAFETY CANS · FILLING CANS · OILY WASTE CANS
APPROVED SAFETY ELECTRIC LANTERNS

VOLUME INDEX

January to December, 1944 — **Volume Twelve**

TO facilitate the location of articles which have appeared in THE REFRIGERATION SERVICE ENGINEER, this index is a regular feature in each December issue, serving as a ready reference of the articles and subject matter which have appeared in the preceding twelve issues. The figure following the date of issue refers to the page on which the article will be found.

A

Admiral Corp. Acquires Range and Refrigerator Divisions of Stewart-Warner..Feb.—58
Advertisement Tells Why Service Calls Cannot Be Answered Promptly.....Oct.—32
Air Conditioning and Commercial Refrigeration Equipment in 1940.....Nov.—21
Conditioning Industry Surveys Postwar Outlook .....Sept.—31
Conditioning Plant, R.S.E.S. Members Help Keep at High Efficiency.....May—38
Along the Pacific Coast Roll Perishables in Refrigerated Trucks, *By James F. Medford* .....Aug.—23
Appliance Industry Asks WPB to Place Ban on All New Models.....July—30
Army Cold Storage Plant Enlarged.....Feb.—37
Service Forces Training Center, Camp Lee, Va., Training Refrigeration Technicians .....July—26
Auto Air Conditioning Predicted.....Aug.—64

B

Backlog Demand for Refrigerators Promises Big Postwar Business.....Aug.—44
Barges, Pre-Fabricated Refrigerated Steel, Food Carriers in U. S. Battle Zone, *By Fred A. Herr*.....Aug.—30
Book Review:
Audels Refrigeration and Air Conditioning Guide .....Oct.—28
Drake's Refrigeration Service Manual..Aug.—59
Oxy-Acetylene Handbook .....May—29
Zero Storage in Your Home.....Aug.—38
Burns, Gordon A., with Canadian Trade Journal .....Oct.—46

C

Canadian Refrigeration Conference Held at Toronto, Fifth Annual.....Apr.—42
Refrigerator Stocks .....Dec.—48
Care for Refrigerator, Urges.....Sept.—38
Ceiling Violations Charged.....June—38
Coldspot Electric Refrigerator, Construction, Operation and Servicing.....Dec.—20
Commercial Refrigeration and Air Conditioning Equipment in 1940.....Nov.—21
Selling.....Jan.—27, Mar.—26, June—27, July—31, Aug.—35, Sept.—31, Oct.—29
Control of Surplus Equipment, Letter Urges... .....Aug.—34
Controlled Materials, Rules on Use Clarified.. .....Mar.—40
Converting Mills Ice Cream Cabinets to Farm Freezers, *By L. K. Wright*.....Dec.—23
Copper Element in Acetylene Torch Detects Gas Leaks .....Mar.—42

D

Dallas Trade School.....Aug.—34
Dealer Suspended for M-28 Violation.....Dec.—38
Deferment of Repair Men Sought by Refrigeration Service Council.....Apr.—34
Douglas Planes, Refrigeration Helps Produce .....Sept.—26
Draft Status Clarified—More Deferments..June—31

E

Electric Eye Warns of Gases and Vapor..Jan.—44
Employers Advised on Deferment of Essential Employees .....May—26
Employment on a Share Basis.....Oct.—44
Engineers Question Claims of "Refrig-O-Master" .....Apr.—40
Excise Tax May Be Assessed on Rebuilt Refrigerators .....Nov.—20

F

Fortune Magazine Publishes Article on Refrigeration .....Jan.—42
Freon Plants.....Mar.—57, May—24
Freon-22, How to Use.....Feb.—30
Frozen Foods Discussed at G.E. Press Conference .....Dec.—33
Movie Produced by G-E Consumer Institute .....Sept.—23

G

General Electric CA Machines, Servicing..... June—23, July—21, Aug.—25, Sept.—25
Foods, Birds Eye-Snider Division Formed.. .....Jan.—42
Government Opens Course in Refrigerator Service .....Dec.—32
Government War Regulations..... ..Jan.—21, Feb.—26, Apr.—25, May —25, June—17, July—17, Aug—17, Sept.—17, Oct.—17, Nov.—19, Dec.—19
Aluminum, New Uses for.....Aug.—20
Applications for Refrigeration Equipment Denied .....Dec.—19
Combat Materials Made by Refrigeration Plants .....June—57
Commercial Refrigerators and Water Coolers .....Jan.—24
Copper Tubing.....Feb.—26, July—20
Wire for Dealers .....Jan.—24
Cork Supplies Increased.....Sept.—19
Exception in Use of Insulating Materials.... .....June—19
Freon, Amendment of M-28 Eases Restrictions on .....July—17
for Theatres .....Sept.—17
Order Amended .....Sept.—17
Restrictions Continued.....Feb.—26
May Be Modified.....Dec.—19
Substitutes Continued .....Oct.—19
Freon—22, Restrict Deliveries.....May—25
Frozen Food Locker Requirements Tightened .....June—19
Gas Rationing Broadened.....Nov.—20
Hand Service Tools Not Available.....Sept.—18
Increased Use of Copper and Aluminum Allowed .....Jan.—24
Industry Advisory Committee Organization Meeting .....June—18
Information on Increased Supply of Materials .....Apr.—25
Inventories for Repair Parts Dangerously Low .....June—17
Inventory Restrictions Lifted.....Sept.—19
Limited Production of Refrigerating Units Discussed .....Nov.—19
Materials for Installing Equipment.....Oct.—18
Maximum Prices Revised.....July—19

Government War Regulations—*Continued*
Mechanical Refrigerators Subject to "Spot Authorization" ..... Dec.—19
Milk Cooler Production ..... Dec.—19
Motors Available on AA-3 Preference Rating ..... Apr.—26
Order L-38 ..... June—19, Aug.—18, Sept.—17
Permits Use of 50% Solder ..... Sept.—20
Postwar Experimental Models May Be Produced ..... Aug.—17
Preference for Repair Parts Revised and Continued ..... Jan.—22
Rating Broadened ..... Aug.—21
Ratings Clarified ..... July—19
Pricing Rebuilt Small Motors ..... July—20
Production of Appliance Motors ..... Aug.—21
of Refrigerators Remains Uncertain .. Aug.—19
Small Motors ..... July—20
Purchase of Trucks ..... Sept.—19, Oct.—19-20
Reconversion Plans Announced ..... Oct.—17
Refrigerated Display Case Production ..... Oct.—18, Nov.—20
Regulation Enables Increase in Prices .. Jan.—21
Repairmen Using Lumber Must Be Certified ..... Aug.—20
Replacement Schedule Program Modified ..... Aug.—21
Restrictions Eased on Equipment Installations ..... Sept.—19
Revised Charges for Overtime Work .... Jan.—23
Rules for Obtaining Materials Clarified . June—17
Service Price Regulations Revised ..... Aug.—17
Silica Gel Under Control ..... Oct.—19
Smith, Sterling, Resigns ..... July—19
Specifications for Condensing Units Revoked ..... Apr.—26
Steel Allocated for Mechanical Refrigerators ..... Oct.—18
Stockpile of New Refrigerators Reduced . June—18
Summary of Pricing Records ..... July—18
Time Limit on Price Adjustments ..... Oct.—18
Tires for Replacement ..... Oct.—19
Tools for New Repair Men ..... Nov.—19
Water Coolers Available ..... Aug.—21
WMC Order Allocates Labor ..... Aug.—22
WPB Orders, Summaries ..... June—19
Short Cut for Repair Materials ..... May—25

H

Heat Pumps for Heating Homes, Possibilities of, *By R. U. Berry* ..... Oct.—21
Hendrickson, R. L., Joins Staff of THE REFRIGERATION SERVICE ENGINEER .. Dec.—33
Home Freezer, Bulletin on ..... Nov.—56
Freezer Cabinet, How to Use a ..... June—20
Cabinet, Industrial Designer Styles New .. Aug.—40
Provides Convenient Access to All Foods ..... Oct.—30
Food Expert Predicts Demand for Large Size ..... Oct.—29
Units Are Designed to Meet Postwar Demands ..... July—34
Demand Shows Postwar Market .... Mar.—26
Huge Postwar Market Indicated in Demand for ..... June—27
Refrigeration, What Will the Requirements Be? ..... Sept.—33

I

Ice Cream Cabinet Rebuilt to Freeze and Store Frozen Foods ..... Aug.—45
Freezer for AAF Squadron ..... Sept.—24
Insulation Controls Pressure in Tank Trucks .... Jan.—29
Reduces Load on Cooling System ..... Jan.—28
International Harvester Plans Household Unit ..... Sept.—34

J

Jobbers Award for Manufacturers .... Feb.—53, ... May—42
Jones Heads OPA Advisory Committee .... Dec.—56

K

Keep 'em Running—Service Man's Job Is to Doctor Ailing Units, *By Felix R. Wierman* ..... Nov.—28
Kelvinator, Three Assistant General Sales Managers ..... June—52
Kromer Resigns as Program Director of NRSC ..... Dec.—32

L

Letter from New Guinea ..... Oct.—44
Lewis, Carroll E., Perfex Corp. ..... June—56
Locker Storage, Maintaining Equipment, *By C. W. Knifen* ..... Sept.—21
Low Temperature Installation for Laboratory ..... Jan.—46
Temperature Storage in the Home ..... Aug.—38

M

Manager of Busy Sales and Service Store Peps Up Local R.S.E.S. Chapter ..... Aug.—35
Manpower Training Program ..... A g.—52
McDermott, H. T., Editor and Publisher of REFRIGERATION SERVICE ENGINEER .. June—58
Methyl Chloride Limitations, *By Walter O. Walker* ..... Feb.—17
Chloride, Survey Lists Refrigeration Equipment ..... Mar.—17
Middle Atlantic Jobbers Hold Meeting .... Apr.—56
Middleman Is Helpful to Business. Why the ..... Feb.—42
Midgley, Thos., Inventor of Freon, Dead .. Nov.—27
Midwest Refrigeration Supply Jobbers Association ..... Jan.—57, Apr.—56, Oct.—58
Minneapolis Ordinance Licenses Refrigeration Service Firms ..... Nov.—38

N

National Refrigeration Manpower and Training Program ..... Jan.—40, Feb.—38
Refrigeration Service Council .. June—40, Oct.—42
Council, Deferment of Repair Men Sought ..... Apr.—34
Supply Jobbers Association Meeting in Chicago ..... Nov.—50, Dec.—35
Navy Feeds Its Sailors Ice Cream—Wherever They Go! ..... Oct.—38
New and Improved Appliances ..... June—48, July—48, Aug.—62, Sept.—58, Oct.—54, Nov.—54, Dec.—50
Adjustable Tool Holder ..... Sept.—58
Amcoil Conditioner ..... Oct.—54
Constant Voltage Transformer ..... Nov.—54
Decimal Point Locator and Slide Rule .. Dec.—50
Detachable Coupling ..... July—48
Does the Valve Seat ..... June—56
Drill Saver ..... Nov.—54
Fastener Stud ..... July—50
Flow Alarm ..... D c.—50
Foam Plastics Good Insulation ..... Aug.—64
Hole Cutting Tool Announced ..... Sept.—58
Logan Quick Change Gear Turret Lathe .. Dec.—50
Metering and Automatic Waste Valve ... Oct.—54
Mogul Nervous Weld Machine ..... July—48
Refrigeration Unit for Victory Ships ... June—48
Rivnut, New Blind Fastener ..... Aug.—62
Self-Flaring Coupling for Plastic Tubing .. Sept.—58
Small Motor, A. G. Redmond Co. ..... Aug.—62
Spasaver Air Coolers ..... Sept.—60
Spot Welding Time and Heat Control ... July—50
Strato-Flo Water Coolers ..... June—48
Suction Line Stop Valve ..... Nov.—54
Valve Plates, New Line ..... June—56
New Appliances to Lighten Housewife's Burden ..... Aug.—42
New Catalogs and Bulletins ..... Mar.—61, Apr.—61, May—60, Aug.—68, Oct.—62
News of the Industry ..... Jan.—57, Feb.—54, Mar.—58, Apr.—55, May—57, June—60, July—54, Aug.—66, Sept.—63, Oct.—56, Nov.—56, Dec.—54

O

Office of Price Administration, Dealer Violates Ceiling Prices ..... Feb.—27
Investigates Service Charges in Washington ..... Sept.—24

P

Pipe and Tube Bending ..... Jan.—15, Feb.—20
Postwar Employment Plans ..... Nov.—29
Refrigerator, Allegheny Ludlum Steel Co. .. .. Aug.—64
Refrigerators ..... Jan.—30
Practical Side of Sub-Zero Refrigeration, *By W. J. Aulsobrook* ..... Apr.—17
Priority Purchase Plan Started by Furniture Store ..... Mar.—29

Q

Quartermaster Replacement Training Center, Camp Lee, Va., Gunther Heads Refrigeration School ..... May—46
Question Box ..... Jan.—34, Feb.—34, Mar.—30, Apr.—29, May—34, June—34, July—36, Aug.—48, Sept.—39, Oct.—34, Nov.—30, Dec.—30
Audiffren Condensing Unit ..... Feb.—35
Building Deep-Freeze Cabinet ..... May—34
Can a Heat Exchanger Be Used with Ammonia? ..... Oct.—33
the Meter-Miser Be Charged in Field? ..... Sept.—44
Capacity of Unit ..... Dec.—30
Change in Motor Changes Cycle ..... Aug.—51
Changing from SO_2 to Methyl ..... Jan.—35, June—34
Comments on Question 613 ..... Oct.—33
on Question 624 ..... Dec.—30
on Question 625 ..... Nov.—30, Dec.—30
Compressor Slugs Oil ..... Jan.—34
Congealed Oil or Wax Clogs Coil ..... Apr.—31
Controlling Ice Formation in Milk Cooler .... Sept.—42
Low Temperature Storage ..... July—36
Converting Ice Cream Cabinet into Freezer ..... Mar.—34
Low-side Floats ..... Aug.—48
Copper Wire, Priority ..... Nov.—31
Crosley Pumps Oil ..... Jan.—38
Direct Expansion vs. Brine Milk Cooling .... Mar.—30
Evaporator Defrosts ..... Dec.—31
Expansion Valve Crosley Capillary Refrigerator ..... Dec.—30
Frick System Frosts to Compressor .... Oct.—46
Frigidaire Irregular ..... Aug.—50
General Electric Erratic ..... Mar.—30
Graybar Meat Case ..... Nov.—31
Grunow Erratic ..... June—36
Pump Dirty ..... July—38
Refrigerator ..... Sept.—39
How to Arrive at Pressure Settings .... June—36
Improvised Freezer Not Cold Enough ... Feb.—34
Inches Vacuum to Absolute Pressure ... Sept.—44
Insulation Values ..... May—34
Locker Plant Service ..... Sept.—40
Making a Cold Storage Box ..... May—34
Methyl Chloride in Galvanized Pipe ... June—34
Multiple Hook-Up Off Balance ..... Mar.—31
Nehi Beverage Cooler ..... Feb.—35
Noisy Motor ..... Feb.—36
Norge Commercial ..... Nov.—34
Off Cycle Flooding ..... Mar.—34
Reclaiming Freon ..... Apr.—29
Remodeling Ammonia Compressor ..... Nov.—30
Repairing Pelco Beverage Cooler ..... Aug.—48
Servicing Cooler Box ..... Oct.—35
Leonard Unit ..... Sept.—40
Settings for Mills Freezers ..... Oct.—33
Soldering Stainless Steel ..... Dec.—31
Suner-Cold Coil Clogs Up .... Jan.—36, Feb.—34
Does Not Regulate Properly ..... May—36
System Flooded with Water ..... Apr.—29
Testing Compressors ..... July—36
Condenser and Transformer ..... Dec.—31
Question Box—*Continued*
Thermostatic Expansion Valve on Fairbanks Morse ..... Nov.—34
Expansion Valve, Setting ..... Nov.—31
Thorough Cleaning Needed ..... Mar.—36
Trouble Corrects Itself ..... Mar.—31
Unbalanced Load on Coils ..... Aug.—48
Use of Drier Coil ..... Oct.—34
Using Brine Tank for Evaporator ..... Sept.—39
Warren Meat Counter ..... Feb.—36
What is the Circuit Through Ice-O-Matic Unit ..... Jan.—35

R

Reed, Paul B., Leaves Servel to Join Perfex Corp. ..... Mar.—57
Refrigerated Steel Barges, Pre-Fabricated, *By Fred A. Herr* ..... Aug.—30
Trucks, Perishables in, Along Pacific Coast ..... Aug.—23
Refrigeration Advisory Committee Holds Meeting on Industry Problems ..... July—40
Employed in New Type of Hospital Train .. .. Feb.—29
Equipment in War Plants ..... Jan.—27
Manufacturers and Jobbers Hold National Meeting in Chicago ..... May—30
In Bakeries—Retarded Dough Process Successful ..... Sept.—28
Service Council Organized in Milwaukee ..... Mar.—42
Refrigeration Service Engineers Society Department ..... Jan.—48, Feb.—44, Mar.—44, Apr.—46, May—50, June—42, July—44, Aug.—54, Sept.—46, Oct.—48, Nov.—42, Dec.—40
Canadian Refrigeration Conference .... Mar.—44
Central Connecticut Chapter Has Successful Year ..... Jan.—48
Chapter Directory ..... Sept.—46-48
Chapter Notes ..... Jan.—48, Feb.—47, Mar.—44, Apr.—48, May—50, June—42, July—46, Aug.—54, Sept.—50, Oct.—48, Nov.—42, Dec.—42
Elm City Chapter Files Petition for Charter ..... July—44
Evansville and Tri-State Chapter ..... July—44
Goldberg, Herman, Christmas Party ..... Jan.—46, Oct.—64
Illinois State Association, Annual Meeting .. .. Aug.—54, Nov.—36
International Directory of Service Companies, Last Call ..... Nov.—42
Interprovincial Chapter, Officers and Directors ..... May—50
Ladies Auxiliary ..... Jan.—56, Feb.—52, Mar.—56, Apr.—54, May—56, June—50, July—52, Aug—58, Sept.—57, Oct.—56, Nov.—50, Dec.—48
Massachusetts State Meeting ..... Nov.—50
Members Help Keep Air Conditioning Plant at High Efficiency, *By Stanford E. Moses* ..... May—38
Montgomery, Ala., Chapter, R.S.E.S. Host at State Meeting ..... Dec.—40
New Chapter Formed at Dubuque, Ia. .. Oct.—48
Ontario Maple Leaf Chapter Honors Service Members ..... Oct.—48
Reading, Pa., New Chapter Organized .... July—44
Saginaw, Mich., Chapter Being Formed .. Mar.—44
Service Engineers' Employment Bureau Is Organized ..... Apr.—46
Youngstown Chapter, Citation Presented ... . Feb.—44
Refrigeration Service in South Pacific, *By Sgt. Charles B. Dunham* ..... Sept.—30
Service Men Return to Jobs ..... Feb.—38
Training School Opened in Baltimore .... Oct.—42
Unit Used for Parachute Drying ..... Feb.—25
Refrigerator Repairmen Scarce in Richmond, Va. ..... Apr.—36
REMA Holds Fall Conference ..... Dec.—34
Repair Parts Production Shows Increase .. May—48
Repairmen Limited on Use of Materials ... Mar.—25
Replacement Parts Become More Plentiful . Dec.—25

S

School for Service Men ..... May—46
Servel Plans Expansion of Postwar Production ..... June—54
Service Classes Train Large Group of Students ..... Oct.—42
Concern Shows Steady Growth During War Years ..... Sept.—35
Council Establishes Training Schools... June—38
Firm Specializes on Scale and Algae Control ..... Aug.—29
Man's Job Is to Doctor Ailing Units, *By Felix R. Wierman* ..... Nov.—28
Service Pointers ..... Jan.—25, Feb.—28, Mar.—24, Apr.—27, May—28, July—24, Oct.—27, Nov.—25, Dec.—29
Are You "Keeping Up" with Concrete?.. Oct.—27
Audiffren Condensing Unit Instructions.. Mar.—24
Blotter Card Good Advertising ..... Nov.—27
Capillary Tubes, New Use for ..... Feb.—28
Changing from F-12 to F-22 ..... Nov.—26
Company Postal Card ..... Jan.—25
Diagnosing Capacitor Defects ..... Oct.—27
Sounds to Locate Mechanical Troubles. Apr.—27
Discharging Refrigerant ..... Dec.—29
Flaring Brittle Tubing ..... Jan.—26
Frost-proof Nuts, Making ..... Dec.—29
Hermetic Noisy on Starting ..... Jan.—26
How to Install a Coldspot Seal ..... May—28
Iodine as a Solvent..... Dec.—29
Neat Installations Pay ..... July—25
New Design for Cooling Drinking Water. Jan.—25
Refrigerant Transfer Unit Homemade.. Nov.—25
Rhythm of Refrigerator Noises ..... Feb.—28
Servicing Whining Seals ..... Mar.—24
So You Think You Have Troubles?.... July—24
Substitute Mounting Springs ..... Apr.—28
Suggestions for Question 590 ..... Apr.—28
Testing Capacitors ..... May—28
Woes of a Serviceman ..... Feb.—28
Wurlitzer Refrigerator ..... Jan.—26
Service Racketeers Cheat Sacramento Housewives ..... Oct.—20
Shop Expands Business Through Selling Used Equipment ..... July—31
Servicing General Electric CA Machines..... June—23, July—21, Aug.—25, Sept.—25
Smith, F. W., to Leave WPB ..... Sept.—18
Snell Establishes Wholesale Business in Dallas ..... May—44
So You Want to Get Into Business for Yourself! *By Paul B. Reed*. Nov.—22, Dec.—26
Solderless Wiring, New ..... Apr.—58
Sub-Zero Refrigeration, Practical Side, *By W. J. Aulsobrook* ..... Apr.—17
Refrigeration—Problems of Application and Maintenance, *By C. L. Olin*..... May—17
Survey Lists Refrigerating Equipment in Which Methyl Chloride Must Not Be Used ..... Mar.—17
Refrigeration Service Facilities in Schenectady Area ..... Mar.—38
Shows Condition of Appliances in Homes.. ..... Sept.—35
Conditions in Jobbing Trade ..... May—42
Suspension Order Reinstated..... Dec.—52

T

Tools for Trainees, Securing ..... Sept.—38
Training Program for Refrigerator Repair Men Moves Ahead ..... Apr.—37
Refrigeration Technicians for the Army, *By Major R. C. Gyunther*..... July—26

U

"Unfreezing" Technique Speeds Production of Lenses ..... Dec.—56

W

Wyllie, John, Jr., Deceased..... Dec.—52

Y

Youngstown Refrigeration Service Class Graduates ..... Oct.—40

INDEX OF ILLUSTRATIONS

A

Advertisement, Milwaukee Refrigeration Service Dealers ..... Oct.—32
Air Conditioning Plant, R.S.E.S. Members, Long Beach Chapter..... May—38-40
Aircraft Instrument Test Cabinet, Stratospheric Conditions (Kold-Hold)... May—19
Starters, Cabinet for Testing for Sub-zero Weather ..... June—22
Army Service Forces Training Center, Camp Lee, Va., Refrigeration Trainees..... ..... July—26-27

B

Barge, Refrigerated ..... Aug.—30-31-32-33
Bay City Chapter Meeting..... Apr.—49
Blotter ..... Nov.—27
Bruno Hole Cutting Tool..... Sept.—60

C

Cartoon—Laugh Bombs ..... Sept.—44
Off the Record..... Oct.—27
Cartoons (Ammons) ..... Jan.—26, Feb.—29, Mar.—25, Apr.—28, May—29, June—31, July—25, Sept.—20, Oct.—28, Nov.—27
Central New York Chapter..... Sept.—52
Charts, Sub-Zero Refrigeration... Apr.—18-19-20-21
Charts, Heat Pump..... Oct.—22-23-25
Chicago Chapter Members at Work and at Play ..... May—51
Clark Adjustable Tool Holder..... Sept.—58
Cleveland Chapter Meeting Snapshots..... Nov.—44
Coldspot Electric Refrigerator, Construction, Operation and Servicing.... Dec.—20-21-22
Compressor (Servel) Diagram..... May—23
Slugs Oil, Diagram..... Jan.—34
Condensing Unit, Single Compressor Type 3-stage (Servel) ..... May—18
Cooler, Aluminum Sheet (Kold-Hold).... May—18
Cooling Drinking Water..... Jan.—25
Corn Belt Chapter, R.S.E.S..... Jan.—52

D

Deepfreeze Santocel Cabinet..... May—22
Detachable Coupling ..... July—48
Diagram and Table, Pipe Bending—Expansion Loop ..... Feb.—23
Bending Large Diameter Pipes..... Feb.—20
Bending Pipes, Fillings..... Jan.—17-19
Compressor, Single, 2-stage Refrigeration Cycle (Servel) ..... May—23
Slugs Oil ..... Jan.—34
Heat Pump ..... Oct.—21
Ice-O-Matic Unit ..... Jan.—36
Melting Tank for Alloy Filler..... Feb.—22
Refrigerant Transfer Device..... Nov.—25
Diagrams, Middleman Helpful to Business. Feb.—42
Pipe Bending Mandrels and Rolls.. Feb.—23-24-25

E

Edison General Electric Appliance Co., Modern Frozen Foods Workshop.....Oct.—31
Evansville Chapter Carter Presentation....Oct.—50

F

Fastener Stud .....July—50
Foam Plastics, G.E. Laboratory.....Aug.—64

G

Gas Leakage Detecting Equipment.....Mar.—42
Gear Turret Lathe, Logan Quick Change..Dec.—50
General Controls Awarded Army-Navy "E" Pennant .....June—60
Electric CA Machines, Servicing..... .....June—23-24-25-26, July —21-22-23, Aug.—25-26-27-28, Sept.—25-26
Scotch—Yoke Manual.....Oct.—62
Goldberg, Herman, Christmas Party.....Jan.—47

H

Heat Pump, Diagram and Charts..Oct.—21-22-23-25
Home Freezer—Arctic Trunk Unit (Jewett) .....Mar.—28
Ben-Hur Mfg. Co.....Aug.—40
Coldspot Unit (Sears Roebuck).....June—30
Deepfreeze Unit .. ..Mar.—27
Esco Cabinet Co.....July—35
Frigidaire .....Sept.—34
Pak-a-way Unit (Schaefer).....Mar.—27
Portable Elevator Mfg. Co.....Oct.—30
Quillen Unit .....Mar.—29
Sanitary Refrigerator Co.....June—28
Seeger Refrigerator Co.....July—34
Victory Quick Freeze, (Wilson Cabinet Co.) .....June—29

I

Ice Cream Freezer for Navy.....Oct.—38
Ice-O-Matic Unit .....Jan.—36
Illinois State Association, R.S.E.S., Annual Meeting .....Nov.—36-37
Insulated Tank Truck.....Jan.—29
Interprovincial Chapter, Officers and Directors .....May—50
Irving's Refrigerator Service Store....Aug.—35-36
Sales and Service Force.....Aug.—36

J

Jig, McBurney Super.....Oct.—54
Jobbers Award, Harry Alter Presents to Joe Krall .....May—42

K

Kansas City Chapter, Annual Dinner.....June—42
Kromer, Ray, and Wyllie, John.....May—31

L

Locker Storage Room.....Sept.—21
Lone Star Chapter Members.....Nov.—46
Long Beach Chapter, Air Conditioning Men... .....May—38-40

M

Magnolia State Chapter Receives Charter..Mar.—48
Melting Tank for Alloy Filter, Diagram...Feb.—22
Middle Atlantic Jobbers Meeting.....Apr.—56
Mile High Chapter, Snapshots and Views of Annual Picnic.....Aug.—57
Mississippi Valley Chapter.....Mar.—48
Modern Workshop for Processing and Storing Frozen Foods .....Oct.—31
Mogul Nervous Weld Pistol and Machine..July—48

N

Neat Installations .....July—25
Niagara Frontier Auxiliary.....Dec.—48
Chapter, Corn and Wiener Roast.....Dec.—44
Group and Officers.....Dec.—44
NRSJA Fall Conference.....Dec.—35

O

Ontario Maple Leaf Chapter Honor Roll...Oct.—48

P

Pipe Bending, Diagrams and Table..Feb.—23-24-25
Bending, Fillings, Diagrams.....Jan.—17-19
Sand Filling, Diagram.....Jan.—17
Pipes, Bending Large Diameter, Diagram..Feb.—20
Portraits:
Allen, George R.....Dec.—54
Allen, Roger W.....Apr.—59
Askin, Joe .....Oct.—58
Aulsebrook, W. J.....June—54
Barber, Capt. .....Sept.—30
Baker, Arley L.....Dec.—58
Bell, Harry F.....June—54
Berk, B. D.....July—54
Butt, A. B., Jr.....July—58
Cameron, Donald G.....Dec.—58
Cameron, Ralph C.....July—58
Courtney, Robert .....Nov.—56
Davis, T. C.....Jan.—61
Dawson, Richard S.....Jan.—58
Doepel, W. A.....Sept.—64
Farrell, T. A.....June—52
Freitas, Leo J.....Feb.—61
Glass, Jack .....Feb.—55
Goldberg, Herman .....Feb.—60
Hammond, John .....Sept.—68
Hendrickson, R. L.....Dec.—33
Huebner, H. C.....July—54
Jones, Austin .....Dec.—54
Jordan, W. D.....Feb.—57
Krauss, John S.....Dec.—56
Lawson, Charles T.....Apr.—55
Legg, E. R.....June—52
Lewis, H. I.....Jan.—60
Logan, Charles R.....Mar.—59
Marsh, Wm. .....July—56
Meyer, Richard N.....Oct.—59
Montgomery, Earl W.....Sept.—68
Olin, Carl L.....June—54
Orr, Dwight D.....Dec.—54
Packard, D. A.....June—52
Plouff, Tom .....Feb.—60
Rambeau, L. D.....Aug.—68
Reed, Paul B.....Mar.—57, Nov.—22, Dec.—26
Robson, F. Neil.....Mar.—59
Sargent, John A.....Dec.—56
Schellenberg, A. B.....May—30
Schenk, John A.....Apr.—60
Sears, R. L.....Mar.—60
Siegfried, W. A.....Aug.—66
Simons, George E.. .....Dec.—58
Siragusa, Ross D.....Feb.—58
Slingman, T. D.....Jan.—61
Smith, Hugo C.....Dec.—58
Snell, L. M.....May—44
Stafford, Willis .....Sept.—64
Stenson, D. E.....Dec.—58
Swanson, C. S.....Feb.—55
Tinkey, Otto G.....July—57
Vermilye, George .....Feb.—60
Waite, Ray P.....Oct.—56
Wetzel, L. E. .....July—56
Wyllie, John, and Kromer, Ray.....May—31
Postal Card for Customers, Modern Refrigerator Service.....Jan.—25

Q

Quartermaster Refrigeration School, Camp Lee, Va., Gunther Heads.....May—46

R

Refrigerant Transfer Device, Diagram....Nov.—25
Refrigerated Barge and Equipment.....Aug.—30-31-32-33
Semi-trailer.....Aug.—24
Refrigeration Equipment for Barges.Aug.—31-32-33
Systems, Inc., Chicago, New Quarters...June—38
Refrigerator in Bakery.....Sept.—28
REMA Directors Guests of Ansul Chemical Co.....Sept.—62
Rivet Storage Cabinet (Kold-Hold).....May—21
Rivnut, New Blind Fastener.....Aug.—62
Resin Pots, Diagram.....Jan.—18

S

Seals for Coldspot Unit.....May—28
Servel President and Sales Manager.....Mar.—60
Shaded Pole Motor, A. G. Redmond Co...Aug.—62
Spasavar Air Coolers.....Sept.—60
Spot Welding Timer.....July—50
Strato-Flo Water Cooler.....June—48
Stratosphere Instrument Test Cabinet (Mobile Ref. Div.).....May—20
Sub-zero Boxes to "Unfreeze" Lenses from Polishing Blocks.....Aug.—29
Super Jig, McBurney.....Oct.—54

T

Thermo-King Mechanical Unit.....Aug.—23-24
Thermostat (United Electric Controls)....May—20
Tool for Removing Seal from Coldspot Unit.....May—28
Transformer, Constant Voltage.....Nov.—54
Trenton Chapter, Demonstration of Coldspot Unit.....June—44
Carroll and Thompson.....Dec.—46
Trophy Awarded by Jobbers.....Feb.—53
Presented Virginia Smelting Co.....July—58

V

Valve, Metering and Automatic Waste, Alco.....Oct.—54
Plates, Chicago Seal.....June—56
Suction Line Stop.....Nov.—54
Virginia Chapter Meeting.....Mar.—51

W

Water Valve, Penn Electric Switch.....Feb.—58
Wyllie, John, and Kromer, Ray.....May—31

Y

York Refrigeration Unit for Ships.....June—48
Youngstown Chapter Meeting.....Feb.—44
Refrigeration Service Graduating Class.Oct.—40

Index to Advertisers

Acme Control Service..... 63
Aerovox Corporation..... 57
Airco Refrigeration Parts..... 62
Airo Supply Co..... 60
Alco Valve Co..... 11
Alter Company, The Harry.....65 and 66
Ansul Chemical Company..... 1
Audel & Co., Theo..... 49
Auto-Diesel Piston Ring Co..... 62
Automatic Heating & Cooling Supply Co..... 63
Automatic Products Company.....36 and 37

Blythe Company, H. W..... 63
Bonney Forge & Tool Works.....Back Cover
Brunner Mfg. Co..... 13

Chase Refrigeration Supply Co..... 62
Chicago Eye Shield Co..... 57
Chicago Seal Co.....Inside Front Cover
Chicago-Wilcox Manufacturing Co..... 64
Commercial Trades Institute..... 62

Davison Chemical Corp.....Inside Back Cover
Day & Night Mfg. Co. (Cooler Div.)..... 53
Detroit Lubricator Co.....2 and 3
Dole Refrigerating Company..... 64
Du Pont de Nemours & Co., E. I..... 8

Edison Cooling Corp..... 60
Electrimatic Valve..... 59

General Controls..... 53
General Electric Co..... 45

Henry Valve Company..... 39
Highside Chemicals Company..... 9
Hubbell Corporation..... 65

Imperial Brass Mfg. Co..... 5

Jarrow Products..... 65
Justrite Mfg. Co..... 66

Kerotest Mfg. Co..... 41
Kramer Co., Fred C..... 64

Logan Engineering Co..... 51
Lyk-Nu Control Service..... 60
Lynch Mfg. Co..... 43

Mayflower Products, Inc..... 63
McIntire Connector Company..... 10
Modern Gas Company, Inc..... 59
Mueller Brass Company..... 14

Nash-Kelvinator Corp'n..... 6
New Duty..... 62
Nobs Chemical Co..... 64

Ranco, Inc..... 16
Refrigeration Equipment Co..... 65
Refrigeration Surplus Dealers..... 65

Sanitary Refrigerator Co..... 55
Servel, Inc..... 60
Service Parts Company..... 61
Standard Solvent Co..... 64
Stangard-Dickerson Corp..... 60
Superior Valve & Fittings Co..... 18

Tecumseh Products Company..... 15
Temprite Products Corp..... 7

United Speedometer Repair Co..... 61
Utilities Engineering Institute..... 61
Utility Thermostat Co..... 64

Virginia Smelting Co..... 4

Weatherhead Co., The..... 47
Western Thermal Equipment Company..... 55
White-Rodgers Electric Company..... 12
Wilson Cabinet Co..... 63

SERVICE MEN WHO KNOW VALUES SAY

"DAVISON'S SILICA GEL

tops all drying agents because it gives the extra protection we need . . . protection against corrosion resulting from acids!"

They're right! Because it was developed especially for the refrigeration industry, Davison's Silica Gel has proved its ability to do more than just eliminate troubles caused by moisture.

Use of methyl chloride as a substitute for scarce "Freon" increases the corrosion hazard. You must play safe. Use the drying agent that removes acids as well as moisture... Davison's Silica Gel.

Your jobber stocks it . . . in factory-charged dehydrators and for refilling.

• IN ADDITION TO MAXIMUM CAPACITY FOR MOISTURE AND REMOVAL OF ACIDS AND CORROSIVE COMPOUNDS . . .

Davison's gives you

Instantaneous Action
Freedom from Dusting and Powdering
and is
Chemically Inert

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

It's Easy to See Why They're Better . . .

It's a funny thing about wrenches. You use them all day long. They're the most important tools in your kit. You know which ones do the job best—which ones last the longest. But chances are you never stop to think why.

When you take a good look at a Bonney Wrench, it's so easy to see why it's better.

The openings in a Bonney Engineers' Wrench, for instance, aren't just milled—they're *precision-milled.* They fit the nut exactly—no slipping, no forcing. The jaws are tapered to give you more turning room. They're reinforced with extra metal at the points of strain.

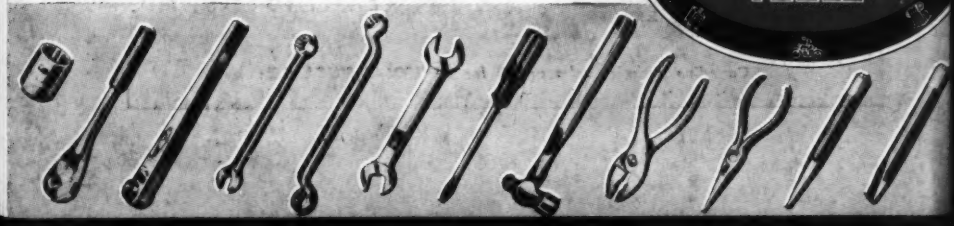
The handles are rounded for an easy, comfortable grip. And something you can't see—to make Bonney Wrenches the strongest and toughest on the market, each one is given our special pyrometer-controlled heat treatment.

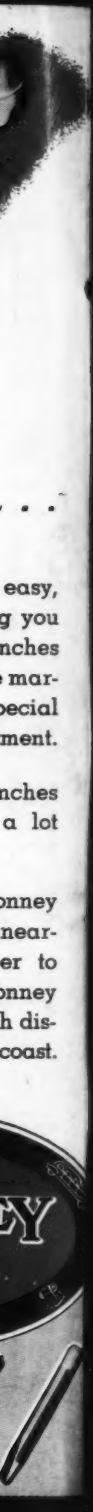
We put a lot into Bonney Wrenches because we want you to get a lot out of them.

If you do not already have a Bonney Engineers' Wrench Set, ask your nearby Bonney distributor or jobber to order one for you now. All Bonney Tools are sold exclusively through distributors and jobbers from coast to coast.

BONNEY FORGE & TOOL WORKS
717 N. Meadow St. • Allentown, Pa.
IN CANADA: GRAY-BONNEY TOOL COMPANY, LTD.
St. Clarens & Royce Aves., Toronto

BONNEY TOOLS





. . .

easy,
g you
nches
e mar-
pecial
ment.

nches
a lot

onney
near-
er to
onney
h dis-
coast.